PERSONALITIES

By George F. Taubeneck

Meet Sally Rand

SAM VINING says that this department "sort of went haywire on the World's Fair"; and Mr. Vining's opinion should be respected, for in addition to being a gentleman and a scholar, he is a most capable manager of department store sales for Westinghouse.

But at the risk of getting Mr. Vining off'n us, we're going to take one more longing, backward look at A Century of Progress. Reason is, we want you gentlemen to meet SALLY RAND.

Last year, as everybody knows, Sally was the reigning personality of the Fair. RUFUS DAWES, Major LENOX LOHR, BEN BERNIE, BUDDY ROGERS, BARNEY OLDFIELD, General BALBO, and all of ROBERT L. RIPLEY'S freaks put together didn't excite the populace a fraction as much as blonde Sally and her fans.

Sally came back to the Fair in 1934, minus her fans. Although she has done a fancy bubble dance in a downtown theater, Sally does her dancing at the Fair in a costume which is about as revealing as a 19th century ladies' bathing suit. Even so, she still packs 'em into her show.

Well, sir, we realized the other day that this paper, which has so thoroughly covered A Century of Progress Exposition, has said practically nothing about the girl who has become so uniformly identified with the Fair, nor have we ever printed a picture of her.

So, when we found ourselves at the Fair on a stopover of the Kelvinator Mystery Cruise, we marched around to Sally's dressing room after her show and got acquainted.

* * *

Cool Dressing Room

Gentlemen, we must tell you. Sally has a General Electric air-conditioning unit in her dressing room! And if SAM NIDES, sales promotion manager of R. Cooper Jr., Chicago G-E distributor, who installed the unit, ever needs a testimonial for the efficiency and comfort provided by that air conditioner, Sally should be able to give him a dandy.

Chicago has been pretty darned hot all summer. Miss Rand's dressing room is a little two-by-four place down underneath the elevated stage, which ordinarily would be hot and stuffy if the whole works were located on a floating iceberg. Furthermore, Sally's dance—as has been stated before—is now done under wraps; and while it may not heat up the customers so much as her 1933 specialty, it leaves more perspiration on Sally when she has finished.

So all in all, Miss Rand finds her G-E air conditioner a lifesaver.

* * *

She Learns to Cook

General Electric has been a help to Miss Rand in other ways, too. (No, Mr. Westinghouse dealer in Lollapalousa, WALTER DAILY is not paying for this G-E publicity—in fact, he won't know anything about it until he reads it). It seems that Sally, being human after all, has fallen in love; and is going to be married.

Now maybe we are seven kinds of a louse for telling this, but Miss Rand explains that when she met her husband-to-be, she heard the wedding bells even before he did. So she decided to practice up a little bit on the culinary arts. Not far away from her show there were some kitchen scientists—at the G-E exhibit in the Electrical Bldg.—she discovered, who could teach her a lot of things about cooking. And they did.

She not only sat in on the lectures, but she was allowed to fuss around the G-E Health Kitchen a bit (note picture on this page). And now if Mr. Sally Rand (he will undoubtedly be that for at least the first year) doesn't like her cooking, he can put in his complaint to Home Service Director EDWINA NOLAN of the General Electric specialty appliance department who, although she has never met Sally, is indirectly responsible for the culinary education Sally has received.

* * *

Darned Smart Girl

Now as to Sally herself. She's a good-sized girl. Probably about five feet six or seven, weighing about 130 pounds. Has good features, and an exceptionally pleasant voice. Is quiet and poised. Although it's hard to make judgment on so small a period of acquaintanceship, she showed every indication of high intelligence.

Emphatically Miss Rand is no giddy youngster. She is a smart young woman who knows where she is going and how to get there. She is a product of publicity; but the interesting thing is that *she has supplied the publicity.* Sally is not simply a dumb blonde who was lucky enough to fall in with a smart manager. She has set her own sails and steered her own course.

A few weeks ago she addressed a Chicago advertising club at a luncheon, and impressed the whole kit and kaboodle of 'em. She'd impress you, too, we think. Funny as this may sound to most of you, we're interested in Sally because of her fine mind. Honest, fellers!

* * *

One Colored Lady

W. T. REACE, who directs retail sales of appliances for the Commonwealth Edison Co. in Chicago, reports that the chest model refrigerators are duds as far as public interest is concerned.

Commonwealth Edison is showing both Frigidaire Kold Chests and General Electric Liftops, but thus far has sold but one job.

One of Chicago's biggest department stores took on a line of chest models, Mr. Reace relates, and made quite a to-do about it. After three weeks of display and promotion, however, they too had made but one sale—and that to a colored lady on the South Side!

No special range rate is being offered by Commonwealth Edison, and so little effort is made to sell electric ranges. The number of Kelvinator refrigerators Mr. Reace's crew sells, though, would keep any distributor in Packards (pardon us, friends in Frigidaire, we mean Cadillacs!).

Mr. Reace, we'd like to add in footnote fashion, gave us a swell interview on our first out-of-town assignment when the writer joined the ELECTRIC REFRIGERATION NEWS staff back in 1929, and we shall be forever grateful. He's just as good a producer, and as full of ideas, now as he was then.

* * *

Johnny Duncombe's Idea

A totally different experience is reported, however, by JOHNNY DUNCOMBE, who works for R. Cooper Jr., Inc., Chicago distributor of General Electric appliances. Johnny manages Cooper's north side store, and sells refrigerators in a territory which runs north from the loop to "72000 north"—which means the territory has a diameter of 72 Chicago blocks, and west from the lake to "3200 west."

There are a lot of rooming houses in this territory, and up to now Johnny's men haven't been able to do much with them. Rentals were simply too low to justify the installation of electric refrigerators. Tenants of these houses are generally no more than one or two to a room, and would have little use for a refrigerator of ordinary capacity.

"Ah!" said Johnny, when he saw the G-E Liftop refrigerator, "that's just the thing for those rooming houses."

And it was.

When we talked to him in Chicago recently, he had sold Liftops to a dozen establishments of this type; and by this time he has undoubtedly sold many more, for he had a long prospect list and his men had caught on to the approach and technique of selling chest models to this particular market.

Johnny, incidentally, is one of the most likeable young men in the industry. His personal popularity in Chicago is something to take off your hat and bow down low to, but nobody begrudges this universal good feeling toward him. He earns it. Johnny has a way about him of making everyone he meets feel that here is a friend who can be counted on in a pinch. Which is probably true.

* * *

RMLA and AOWHA

Our stern and factual-minded contemporary, the *Engineering News-Record,* recently published an open letter to Prof. REXFORD TUGWELL et al which we hope has been brought duly to the latter's learned attention. This scheme tops anything the political academicians down at Washington have turned up yet:

"Sir—In a recent press notice it was noted that $75,000,000 was to be expended in the development of a so-called timber belt, 100 miles wide, stretching from New Mexico to Canada, across the semi-arid plains of the Central West, the object being to create a more equable climate in the Mississippi Valley, increase the water supply and diminish wind erosion.

"Two alternative schemes have apparently been overlooked, either of which, it is believed, would bring about results fully comparable with the development of the tree belt.

"The first involves the simple expedient of reversing the rotation of the earth, thus bringing the Gulf Stream along the Atlantic seaboard, making it a French Riviera, the prevailing easterly winds to carry the moisture to the foothills of the Rockies.

"The only possible drawback to this scheme would be its effect upon California, for the rotation of the earth from east to west might shift the Japan current further westward, thus making the California climate much more "unusual" than it is at the present time.

"In view of the fact, however, that California is largely Republican, it would seem that this minor disadvantage might be overlooked.

"The second proposal might not require as much assistance from on high. It is that the Rocky Mountains be leveled. These mountains now deflect the moisture-laden winds from the Pacific Ocean upward, and most all of the moisture is precipitated on their westward slopes, leaving little for the vast Mississippi River basin.

"Undoubtedly the mineral resources made available in the leveling process would more than pay for the labor involved and in addition the rock could be spread on the 75,000,000 acres of eroding land and help keep it in place.

"If man-hours were taken into consideration it is conservatively estimated that this project would require about the same number of man-hours as will be required to water the tree belt after it is once planted and to patrol the 200,000 miles of fence being constructed to protect them.

"Neither of these schemes has apparently been given serious consideration and it is suggest that a Rocky Mountain Leveling Administration (RMLA) and an Atlantic Ocean Westward-Ho Administration AOWHA be formed to study the question."

Leonardo di Galileo.
Washington, D. C., Aug. 10, 1934.

* * *

Concerning Bill Swan

In a recent issue of the NEWS careful readers may have found—if their eyesight was good—a six-line item about BILL SWAN, G-E dealer in Connellsville, Pa.

During the first seven months of 1934, said the item, Mr. Swan sold 211 electric refrigerators, 11 water coolers, two commercial refrigeration installations, and one electric range—in a town which has a population of 13,290 persons.

Partly because of its size, the item was tucked away in a corner of the paper. Gentlemen, we want to apologize. Particularly do we wish to beg Bill Swan's pardon. That news story deserved a prominent place on the front page.

There are 2,500 electric meters in Connellsville. In the span of seven months, Mr. Swan made 224 unit sales there. Which comes powerful close to being *10 per cent of the electric meters!*

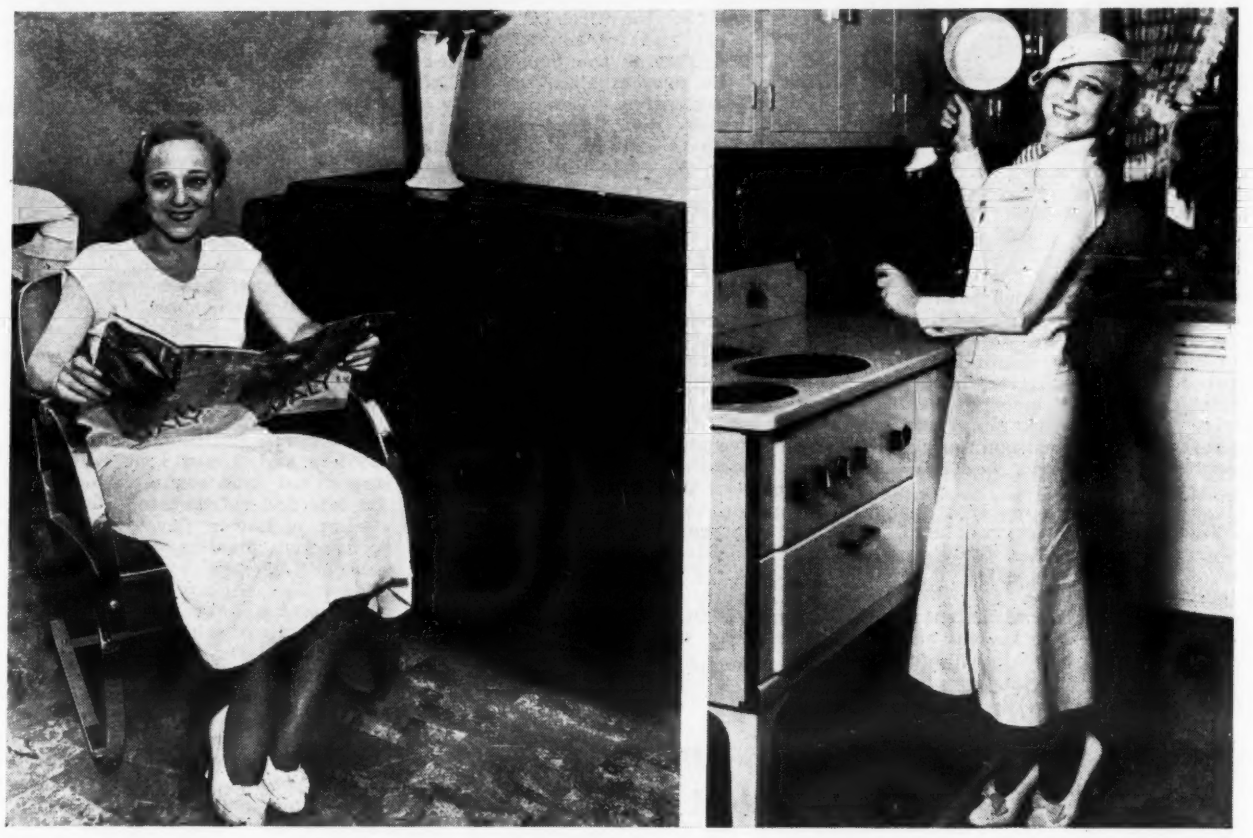
Any man who can make sales to 10 per cent of his total possible market—not even excluding those who are already users—deserves a 28-gun salute, a grand salaam, a Congressional medal with palms down to the trousers line, three rousing cheers, and a big gob of praise. All of which we hereby and now bestow upon Dealer Bill Swan, with our very best brand of compliments.

* * *

Fashion Hint

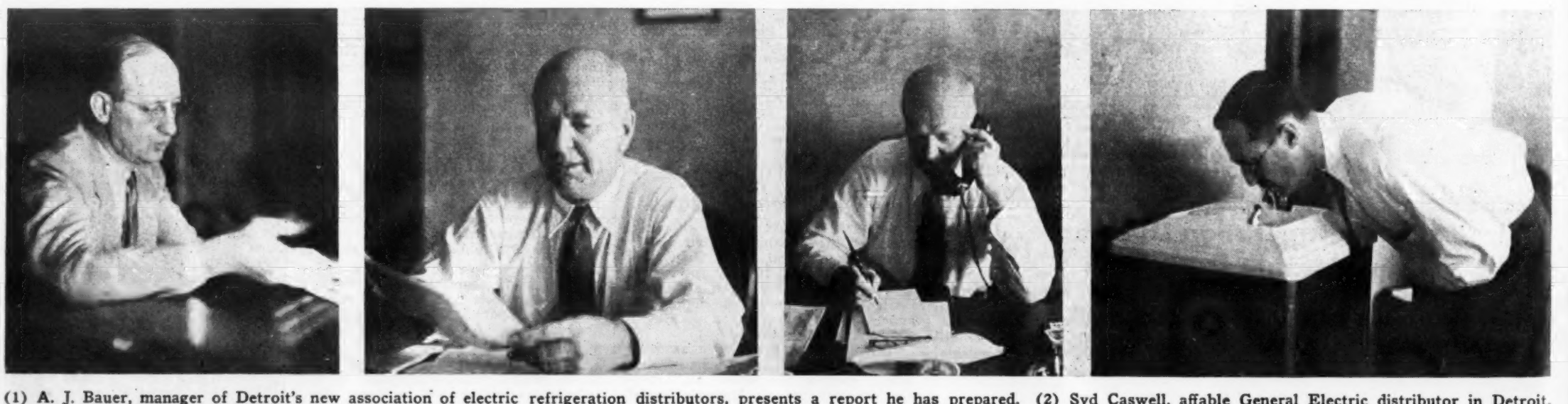
Note to private secretaries, wives, and daughters of distributors and dealers: A visit to New York City last week produced one unassailable fact—if your hat doesn't have a feather in it this fall, everybody will think it's last year's bonnet. The Robin Hood-Yankee Doodle influence is *felt* this year. By the way, why not call these 1934 hats Robin *hoods*?

Behold! Sally Rand at Home—No Fans



As told in the story on this page, Sally Rand, famous the world over for her fan dance at A Century of Progress Exposition, kept cool during Chicago's scorching hot days last summer with the aid of a General Electric air-conditioning unit. After looking pleased and happy beside the air conditioner in her dressing room, Sally donned the hat and jacket to her chic white linen suit, and went over to the Electrical Building, where she did a "pan dance" for the camera in one of the G-E all-electric kitchens at the Fair, where home economics demonstrators have been helping her prepare for her coming marriage.

Headliners of Detroit Refrigeration Circles Stay on the Job Despite Lure of Ball Games



(1) A. J. Bauer, manager of Detroit's new association of electric refrigeration distributors, presents a report he has prepared. (2) Syd Caswell, affable General Electric distributor in Detroit, reads that same report. (3) Mr. Caswell again. (4) D. A. Maclennan, who recently left the R. Cooper, Jr., organization in Chicago to join Mr. Caswell as sales promotion manager.

62

THE JOHN CRERAR
DEC 14 1934
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THE NEWSPAPER OF THE INDUSTRY

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Taxes Collected On Refrigerators Show Big Gain

Manufacturers Share of Excise Duty Total Is $5,525,912.94

WASHINGTON, D. C. — Manufacturers of mechanical refrigerators and component parts contributed a total of $5,525,912.94 to the Government's money coffers in excise taxes during the fiscal year ending June 30, 1934, according to the recent preliminary statement of Internal Revenue Collections released by the U. S. Treasury Department. This sum is about 2.6 times as great as the $2,111,868.76 the manufacturers paid out during the fiscal year 1933.

Radio and phonograph manufacturers were assessed $3,156,777.38 in excise taxes during the past fiscal year as compared with $2,206,763.39 in the fiscal year 1933, an amount about 1.5 as great as the 1933 collection total.

Excise taxes on sales by the manufacturer were inaugurated with the passage of the Revenue Act of 1932, providing for a tax to be paid by the manufacturer, producer, or importer on all sales, whether made directly or through an agent. The tax imposed on sales in both the refrigerator and radio fields is equivalent to 5 per cent of the wholesale price at which the manufacturer or his sales agent bill the distributor.

Household mechanical refrigerators, parts and accessories, including cabinets, compressors, condensers, expansion units, absorbers, and controls are considered taxable items under the provisions of the Revenue Act. Taxable radio and phonograph apparatus includes chassis, cabinets, tubes, reproducing units, power packs, phonograph mechanisms and records.

Manufacturers operating in the states of Ohio, Michigan, Indiana, Pennsylvania, and Illinois, ranking in the order listed, contributed $5,366,439.70 or over 97 per cent of the total revenue derived from refrigeration taxes. In the fiscal year 1933 these same five states paid $2,031,882.56 or over 96 per cent of the total. Highest recepits for 1934 were in Ohio where manufacturers paid out $2,225,610.90 or 40 per cent of the total for the country, while Michigan producers were assessed $1,504,429.28 or 27 per cent. As in 1933, no refrigerator excise was collected in 27 states.

Leading states in total revenue collections from radio and phonograph manufacturers were New Jersey, Pennsylvania, Illinois, New York, Massachusetts, Ohio, and Indiana, ranking in the order listed. Producers in these seven states were assessed a total of $2,881,150.95 or nearly 91 per cent of the radio excise.

It is of interest to note that while excise revenues from the refrigeration industry were 5 per cent below those derived from radio products in 1933, refrigeration assessments topped those from radio equipment by 75 per cent during the fiscal year 1934.

Provisions of the Revenue Act of 1932 applicable to mechanical refrigerators and components are stated in Section 608 as follows:

"There is hereby imposed upon the following articles, sold by the manufacturer, producer, or importer, a tax equivalent to 5 per centum of the price for which so sold:

"(a) Household type refrigerators (for single of multiple cabinet installations) operated with electricity, gas, kerosene, or other means (including parts or accessories therefor sold on or in connection therewith or with the sale thereof).

"(b) Cabinets, compressors, condensers, expansion units, absorbers, and controls (hereinafter referred to as "refrigerator components") for, or suitable for use as part of or with, any of the articles enumerated in subsection (a) (including in each case parts or accessories for such refrigerator components sold on or in connection therewith or with the sale thereof) except when sold as component parts of complete refrigerators or refrigerating or cooling apparatus. Under regulations prescribed by the Commissioner, with the approval of the Secretary, the tax under this subsection shall not apply in the case of sales of any such refrigerator components by the manufacturer, producer, or importer to a manufacturer or producer of refrigerators or refrigerating or cooling apparatus. If any

(*Concluded on Page 12, Column 1*)

Rowles Is Appointed Sales Manager of Norge Division

DETROIT—W. C. "Bill" Rowles has been appointed sales manager of the commercial refrigeration, Broilator gas range, and Aerolator air conditioning divisions of Norge Corp., succeeding Harry Newcomb, formerly in charge of Norge commercial refrigeration. Mr. Newcomb is now with Servel, Inc., at Evansville, Ind.

Mr. Rowles spent several years in the automotive industry prior to entering the refrigeration field in 1918 when he joined the Guardian Frigerator Co. of Detroit as works manager. This company, owned by Durant, later became Frigidaire Corp. with which Mr. Rowles was connected until 1822 as engineering and production consultant.

From 1922 until 1931 he was with Climax Engineering Co., Clinton, Iowa, which produced methyl chloride and ammonia commercial systems, and since 1931 he has been with Norge for the greater part of the time being in charge of southwestern dealer operations.

For the past year and a half Norge has been experimenting, developing, and testing commercial machines, observing a number of trial installations in Detroit and other selected cities, and in August released complete data on the Norge commercial line to its distributors.

Dairy Show to Open Monday in Cleveland

CLEVELAND—With "Modernize for Profit" as its theme, the country's biggest industrial show—the Dairy Industries Exposition—will open next Monday, Oct. 15, for six days' run in the public auditorium here under sponsorship of the Dairy and Ice Cream Machinery and Supplies Association.

As is customary, the International Association of Milk Dealers and the International Association of Ice Cream Manufacturers will hold conventions during the show. More than 250 companies have reserved space for display

(*Concluded on Page 2, Column 4*)

Compensated Humidity Control Is Introduced

MINNEAPOLIS—Now in production by the Minneapolis-Honeywell Regulator Co. of this city is a new compensated humidity control system which is designed to govern humidity at any desired differential between inside relative humidity and outside temperature. It is intended for use with heating systems.

When it is in operation, states the manufacturer, the variable factors in building construction such as insula-

(*Concluded on Page 2, Column 5*)

Name Newcomb As Manager of Servel Electric

New Executive to Head Sales and Production On Commercial

NEW YORK CITY—(Special Wire to ELECTRIC REFRIGERATION NEWS)—Louis Ruthenburg, president of Servel, Inc., has announced the appointment of Harry Newcomb as general manager of the commercial electric refrigeration division of Servel, Inc. He has already assumed his new duties.

The new general manager will have charge of the sales, engineering, and manufacturing departments of the commercial refrigeration division, which are now grouped into a self-contained effective unit.

Mr. Newcomb comes to Servel with a background of experience in the commercial refrigeration industry. His experience results from active participation in every phase of the business including sales, service, engineering, and manufacturing.

After serving in various capacities in the early days of the business he later became service manager and then commercial sales manager with Copeland Products, Inc. In 1933 he became commercial sales manager for Norge Corp. which post he left to come to Servel.

Leonard Is Enlarging Grand Rapids Plant

GRAND RAPIDS, Mich.—Work is now underway on additions and alterations at Leonard Refrigerator Co.'s cabinet plant here, where $150,000 has been appropriated to provide space and equipment for employees' recreation and for increasing the capacity of the porcelain plant.

The management has turned over for employees' recreation and per-

(*Concluded on Page 2, Column 4*)

New Plant Acquired for Chrysler Air Conditioning

DETROIT—Factory headquarters of the Amplex division of Chrysler Corp., which manufacturers the Airtemp air-conditioning line for Chrysler, have been moved to an eight-story building at 8012 Conant Road here, according to E. S. Chapman, Amplex president. Air-conditioning production plans necessitated the change.

This equipment is now being manufactured and assembled on the upper floors of the new building, which in addition houses facilities for manufacture of industrial and marine engines, vibration dampers, engine mountings, and oilite bearings.

Grunow Firm Shows Profit of $11,891 For Fiscal Year

CHICAGO—Net profit of $11,891, equal to four cents a share on 298,705 no par shares, was shown by the General Household Utilities Co., manufacturer of Grunow refrigerators and radios here, at the end of its fiscal year, July 31. This is after depreciation, amortization, capital stock tax, and provisions for federal income taxes and other charges.

This compares with $20,113 net profit for the company's preceding fiscal year—seven cents a share on 271,705 shares.

Beloit Company Will Make Line of Coils

BELOIT, Wis.—Yates-American Machine Co., here, has just entered the refrigeration field with a new line of condensers, evaporators, and fin coils, according to Alvin Haas, vice president and general manager of the company.

Mr. Haas states that during the past four months an entire building on their Beloit property has been equipped and production started on radiators for automobiles, trucks, tractors, road machinery, and other industrial units.

Unit heaters for heating purposes; condensers, evaporators, and fin coils for air conditioning and refrigeration, and other heat transfer units are also being produced.

Organized more than 50 years ago the Yates-American company is a large manufacturer of woodworking machinery.

Heading the new division of the company is Roger Birdsell who has been active in the manufacture and sales of radiators with other companies for the past 10 years. Former associates of Mr. Birdsell who have joined the Yates-American company include Mr. G. W. Foote, superintendent, Mr. W. C. Klespe, chief engineer, and L. C. Evans, research engineer.

Philadelphia Group to Seek Service Ordinance

PHILADELPHIA—Ordinance committee and officers of the Electric Refrigeration Association of Philadelphia, service men's organization, are meeting today (Oct. 10) to prepare rules governing refrigeration service and installation which will be submitted to the city as a proposed ordinance, according to B. G. Hathoway of the Victor Sales Corp., member of the group.

The association was formed in November of 1933. Officers are: R. H. Keil, president; Raymond Solly, vice president; R. W. Seed, treasurer; S. Goodman, secretary.

FHA to Finance Appliances that Can Be 'Built-In'

Meetings Scheduled to Describe Program for Businessmen

WASHINGTON, D. C.—Several products of major importance in the household electric appliance field have been ruled upon by the Federal Housing Administration as "built-in," and are consequently included in improvements which may be financed by insured loans under the government-sponsored Better Housing Program.

Among them are automatic refrigeration, if it is permanently attached to the wiring; electric ranges, if permanently attached to the wiring system; air-conditioning equipment; domestic water-heating equipment; oil burners, including oil storage equipment and thermostatic controls; and single-unit air conditioners, vacuum cleaners, humidifiers, fans, and radios, if they are built-in.

The Federal Housing Administration recently called a meeting of industry representatives to solicit their advice in connection with the campaign, outline details of the program, and suggest ways in which industry can aid the drive.

Manufacturers should first examine their own homes and business quarters and start needed repair work immediately, those at the meeting were told. They should next inform their employees, business friends, and personal acquaintances of the program and urge them to "fall in."

As individuals and business organizations, the manufacturers should help promote local campaigns by participation, personal cooperation and advice, and financial aid. They should make aggressive efforts to promote, in connection with the program, such of their products as fit into the campaign.

F.H.A. officials further recommended that manufacturers make reference to the plan in their advertising copy and radio programs, and that they submit to the F.H.A. suggestions for improving any phase of the campaign.

At the meeting, it was stated that the Federal Housing Administration will supply mats and electrotypes for use by manufacturers on letterheads and in advertisements and bulletins. These materials, obtainable from the Advertising Materials Section of the administration, are free of charge.

The organization will also make loans of "visomatic" projection equipment for giving presentations of the Better Housing Movement to groups of employees and other assemblages. It is also prepared to supply varisized posters ready for the imprint of cooperating manufacturers.

Series of Meetings Is Announced for 32 Cities

WASHINGTON, D. C.—The Federal Housing Administration, through its Industries Division, B. J. Flynn, director, and its Field Division, W. D. Flanders, director, has announced a series of meetings in 32 industrial centers to carry the message of the Better Housing Program to industry.

The regional meetings will be received by all manufacturers, general manufacturers, building material manufacturers, including sales managers, advertising managers, general managers and salesmen; prominent distributors; architects; presidents and secretaries of building trades associations of both employers and labor; advertising agencies, financial institutions; public utilities—gas and electric.

Following is the list of cities on the schedule and dates on which meetings will be held:

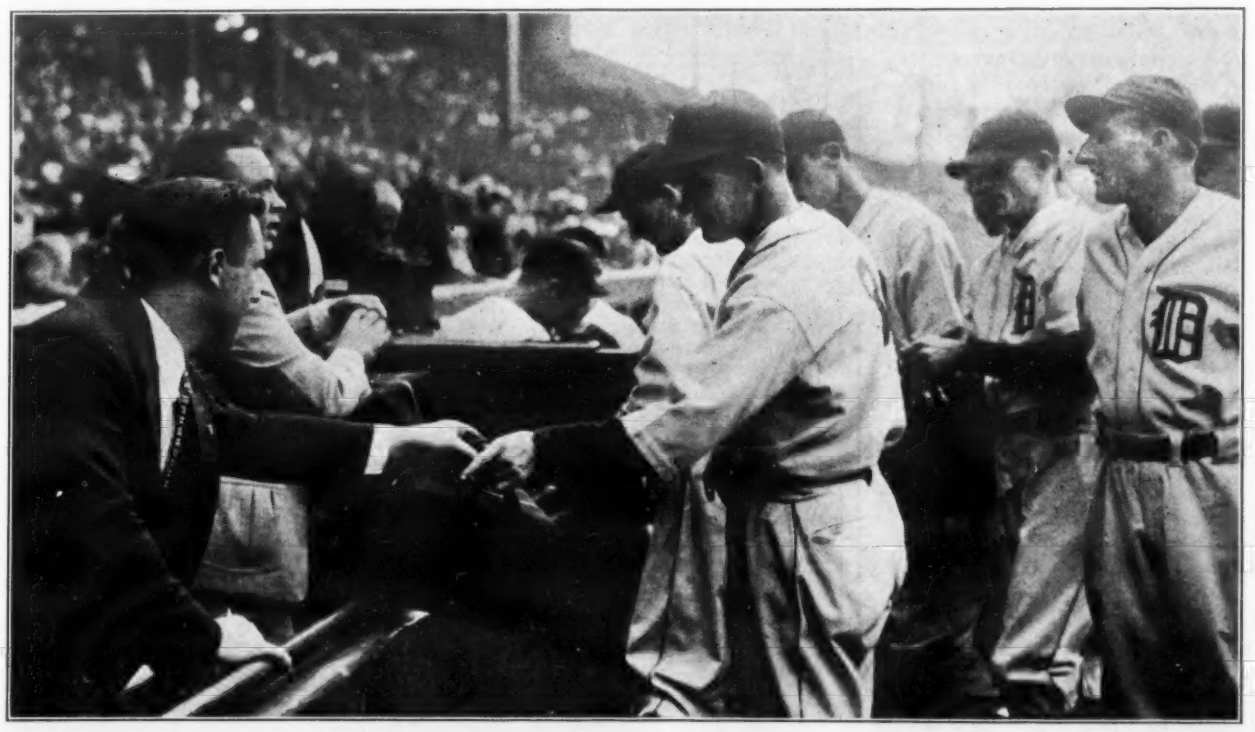
Atlanta, Atlanta Biltmore, Wednes-

(*Concluded on Page 2, Column 3*)

Uniflow Appoints Quirk Michigan Distributor

LANSING, Mich.—John J. Quirk of this city has been appointed Michigan distributor for the Uniflow Mfg. Co.'s Electrik-Ice refrigeration line. He has leased quarters at 130 East Washtenaw St., which will serve as the Michigan headquarters.

Bill Grunow Gets in Under the World's Series Tent



Bill Grunow (third from left), president of General Household Utilities, presented the Detroit Tigers with portable Grunow radios before the World's Series. Manager Cochrane received a deluxe all-wave console.

111,808 Washer Units Shipped in August

CHICAGO—August shipments of household washing machines totaled 111,808 units, the second highest figure reported for that month in the history of the industry. This figure was topped by better than 32,000 units in the "runaway market" of the summer of 1933 when August shipments totaled 144,092. The figures were reported to J. R. Bohnen, secretary of the American Washing Machine Manufacturers' Association, by Ernst & Ernst, certified public accountants.

Shipments for the first eight months of the current year amounted to 877,251 machines being 35 per cent ahead of the same period of 1933.

Continued high sales of home ironing machines were reported with the August figure being given as 11,030 units as compared with 8,682 in July and 7,812 in August, 1933. Shipments for the first eight months are 86 per cent above the same period of 1933.

According to Bohnen, it is anticipated that 1934 will prove the greatest year in the history of the washing machine industry with indications that the total for the year will probably reach 1,250,000 washers as compared with slightly over 1,000,000 for 1933.

Central Hardware Co. to Sell Westinghouse

SALINAS, Calif.—Central Hardware Co. has been appointed Westinghouse electric refrigeration distributor for the Salinas Valley for domestic refrigeration and Monterey county distributor for commercial refrigeration.

L. R. "Bob" Spates, refrigerating engineer, is in charge of this department, states W. E. Altaffer, manager of the Central Hardware Co.

Mrs. L. R. Spates, household appliance expert, is acting in an advisory capacity as to the proper use of the appliances and to give practical demonstrations to those interested. A complete service department for electric refrigeration is maintained.

Enlargement of the home utilities department of the store has been made to include other household appliances such as ranges, washing machines, ironers, vacuum cleaners, and small electrical appliances.

Kelvinators Are Installed In TVA Workers' Homes

CHATTANOOGA, Tenn.—Kelvinator refrigerators have been installed in 75 of the model homes erected in the town of Norris, Tenn., principally for members of the Tennessee Valley Authority and employees at the Norris Dam on the Clinch River.

At the present time, some of the homes are built complete with refrigerator, range, and water heater, while in others these major appliances are optional with the tenants.

Home economists from the University of Tennessee, working in collaboration with the TVA, have personally instructed each housewife in the use of these appliances.

Lewis & Conger Show Small Air Conditioner And CO2 Refrigerator

NEW YORK CITY—Recently introduced to Gothamites by Lewis & Conger, New York houseware and gadgeteer dealer, are two rather unusual novelties, one a small air conditioner and the other a portable dry ice refrigerator.

"Vita Breeze" is the name given the small table model air conditioner which operates on the principle that air blowing over a dampened surface becomes chilled and cleaned. An absorbent cloth wheel rotates through a reservoir of water in the bottom of the 13½ inch wide by 19 inch high cabinet which is made of enameled steel. Water in the reservoir is maintained at an even level by means of an automatic feed pipe leading from a tank above.

Unique feature of the air conditioner is that a 10 or 12 inch electric fan is placed behind the cabinet setting the cloth wheel in motion and driving air through the moistened cloth into the room. The cabinet is made in the one size only and retails at $17.50.

The Portable Refrigerator, which is mainly designed for use by week-end campers and tourists, is manufactured by Morgan & Company of St. Paul, Minn., and is sold under the trade name "Ceomatic." The exterior covering is satin-black DuPont Fabrikoid and the seven-eighth inch thick walls are insulated by the polished aluminum reflective method, said to be vermin-proof. The box is 26¾ inches in length, 12⅝ inches in width, and 17¼ inches high. Metal corners, top latches and handles are cadmium plated. Food storage capacity of the refrigerator is 1.7 cubic feet.

The refrigerant used is a 5 by 5 by 10 inch block of solid carbon dioxide weighing approximately 15 pounds. Water ice may be used if desired but is not as satisfactory for maintaining low temperatures. The dry ice is placed in a galvanized metal container which may be removed for cleaning.

It is claimed that under normal conditions a temperature of approximately 48 degrees can be maintained and that an adjustable device permits control of temperatures as low as freezing. Satisfactory refrigeration can be maintained for several days without renewing the dry ice.

The Portable Refrigerator is available in black and several colors. Price for the black model mentioned above is $23.50 with prices for colors ranging slightly higher.

Tutein Succeeds Cowling In NRA

WASHINGTON, D. C.—Dexter A. Tutein, formerly with the NRA Industrial Advisory Board is succeeding Col. J. G. Cowling as deputy administrator in charge of Division 2, NRA, which includes the electrical manufacturing industry.

Col. Cowling has been transferred to the NRA Chicago office.

One Day Service

One potent reason Copeland distributors are making money is found in the speed and certainty with which orders for service parts are handled at the factory.

To maintain satisfactory parts service on hundreds of thousands of units, some dating back to 1918, involves skillful planning, adequate inventories and perfected technique in the handling of orders.

Orders for replacement parts are now shipped invariably the same day received, enabling distributors and service organizations to handle repairs and replacements very rapidly . . . Copeland owners everywhere have learned to rely on this fast action on the part of our service organization and have no hesitancy in placing orders for new equipment, either Household or Commercial.

From Maine to Florida, from Washington to California, from the Middle West to Louisiana and from all the States between, orders for equipment and replacements reach us daily and are handled expeditiously and correctly.

Copeland, with its complete line of Domestic and Commercial models; world-renowned for their Efficiency, Economy and Dependability, excels in superb service to its users and distributors.

Distributors who appreciate the importance of 100% Service are invited to write, call, or wire for particulars of our exclusive distributing franchise. It means PROFIT, now.

COPELAND REFRIGERATION CORP., Mount Clemens, Mich.
Division of Winslow-Baker-Meyering Corp.

Copeland
DEPENDABLE *ELECTRIC* REFRIGERATION

FHA Plans Meeting On Housing Program

(Concluded from Page 1, Column 5)

day, Oct. 31; Baltimore, Lord Baltimore, Monday, Oct. 22; Boston, Statler, Monday, Oct. 15; Buffalo, Statler, Tuesday, Oct. 23; Cincinnati, Netherland Plaza, Monday, Oct. 29.

Chicago, Stevens, Tuesday, Oct. 9; Cleveland, Cleveland, Thursday, Oct. 25; Dallas, Baker, Monday, Oct. 29; Denver, Brown Palace, Wednesday, Oct. 17; Detroit, Statler, Wednesday, Oct. 24; Indianapolis, Claypool, Thursday, Oct. 11; Jacksonville, Mayflower, Monday, Nov. 5.

Kansas City, Muehlbach, Thursday, Oct. 11; Louisville, Brown, Tuesday, Oct. 30; Los Angeles, Ambassador, Friday, Oct. 26; Memphis, Peabody, Tuesday, Oct. 30; Milwaukee, Schroeder, Monday, Oct. 8; Minneapolis, Radisson, Wednesday, Oct. 10; Newark, Douglas, Thursday, Oct. 18.

New Orleans, Roosevelt, Thursday, Nov. 1; New York, Pennsylvania, Tuesday and Wednesday, Oct. 16 and 17; Omaha, Fontenelle, Friday, Oct. 12; Philadelphia, Benjamin Franklin, Friday, Oct. 19; Pittsburgh, William Penn, Friday, Oct. 26; Portland, Sovereign, Tuesday, Oct. 23; Reading, Abraham Lincoln, Thursday, Oct. 4; Richmond, John Marshall, Wednesday, Nov. 7; St. Louis, Statler, Wednesday, Oct. 10.

Salt Lake City, Newhouse, Thursday, Oct. 18; San Francisco, Palace, Thursday, Oct. 25; Seattle, Olympic, Monday, Oct. 22; Trenton, Stacey Trent, Wednesday, Oct. 3.

Sound Pictures to Show Benefits of FHA Program

WASHINGTON, D. C.—Property owners, financial houses, and contractors are given an illuminating picturization of the possibilities of the Better Housing Program of the Federal Housing Administration in a new series of sound pictures, known as Visomatic productions.

These photographic publications, of which more than 300 sets are being issued for nation-wide distribution, portray the benefits and advantages that await home owners, business property owners, and industry generally, in the National Housing Act. Each consists of a series of "still" pictures, with accompanying recorded script describing each illustration and discussing the modernization and repair program's various features.

Four separate Visomatic productions comprise the series. The first of these treats the modernization program as it affects the property owner, and requires 75 minutes for showing. Specific instructions are given for obtaining loans, suggestions are made for improvements, and the effect of the program convincingly presented.

A series of charts, showing community campaign organization set-ups, with suggestions for developing local modernization drives, is the feature of the second production, which requires 30 minutes for showing.

No. 3 production shows financial institutions how they can aid in the program, and gives detailed instructions for making character investigations, credit reports, and proceed with making loans in accordance with the regulations of the National Housing Act. This one takes 45 minutes to show.

The last of the series is produced for the benefit of dealers and contractors and also requires 45 minutes running time. It tells this group how it may obtain the benefits of the program and at the same time aid the property owner in his plans for property improvement.

The Visomatic outfits are being placed in the hands of regional, state, and district directors of the Federal Housing Administration, and a system has been worked out whereby local campaign committees may procure them from Western Union offices all over the country, with an experienced operator available with each.

Distributor Is Named For Stewart Warner

SYRACUSE, N. Y.—City Electric Co. of this city has been appointed distributor for Stewart-Warner radios and electric refrigerators.

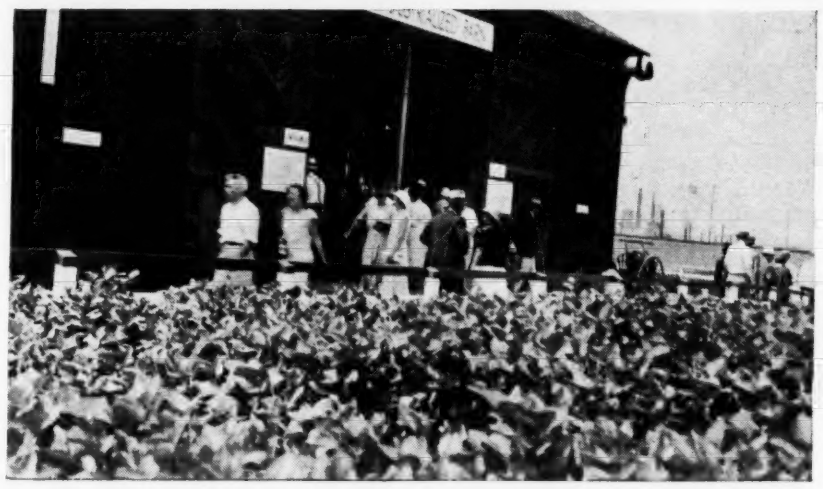
Territory served by the company includes Cayuga, Cortland, Franklin, Jefferson, Lewis, Madison, Onondaga, Oswego, and St. Lawrence counties, with headquarters at 552 S. Clinton St., Syracuse.

Dealer sales activities are in charge of Jack Isaacs.

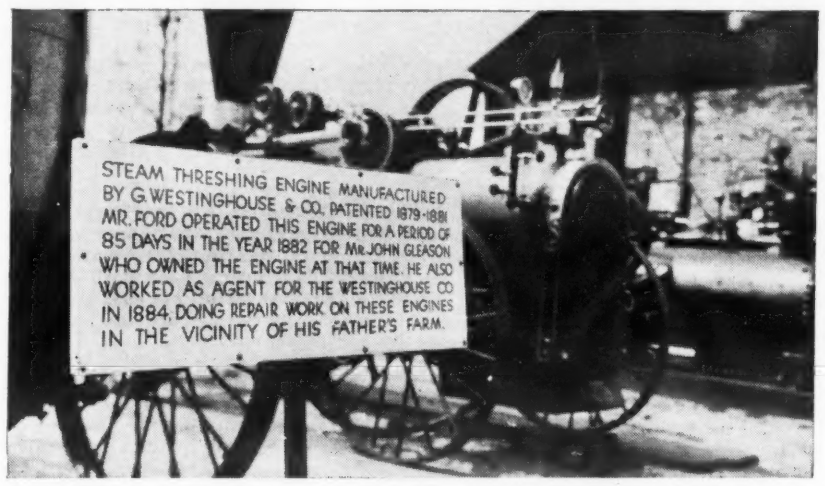
'Ace' Line Displayed by American Hard Rubber

NEW YORK CITY—American Hard Rubber Co. of this city will display its "Ace" hard rubber products, many of which are used in electric refrigeration, at the Industrial Materials Exhibit to be held Oct. 15 to 19 at the Park Central hotel here.

Ford at the Fair



In the foreground of Henry Fords "industrialized barn" at A Century of Progress, is a crop of soybeans which are used as a base for many materials that go into Ford cars. The barn itself, in which Mr. Ford worked as a young man, has been fitted up with machinery to show farmers at the Fair how simply the initial processes of manufacturing soybean products can be done right on the farm.


STEAM THRESHING ENGINE MANUFACTURED BY G. WESTINGHOUSE & CO. PATENTED 1879-1881
MR. FORD OPERATED THIS ENGINE FOR A PERIOD OF 85 DAYS IN THE YEAR 1882 FOR MR. JOHN GLEASON WHO OWNED THE ENGINE AT THAT TIME. HE ALSO WORKED AS AGENT FOR THE WESTINGHOUSE CO IN 1884, DOING REPAIR WORK ON THESE ENGINES IN THE VICINITY OF HIS FATHER'S FARM.

Westinghouse steam threshing machine, operated by Henry Ford in 1882.

Dairy Show to Open Monday in Cleveland

(Concluded from Page 1, Column 2)

of their products at the big exposition.

Those of the exhibitors who are in, or allied with, the refrigeration industry are the following:

Allegheny Steel Co., Louis Allis Co., Aluminum Co., American Radiator Co., Anheuser-Busch, Inc., Armstrong Cork & Insulation Co., The Bristol Co., Cherry-Burrell Corp., Chester Dairy Supply Co., Cork Import Corp., The Creamery Package Mfg. Co., Fitz Gibbon & Crisp, Inc., The Frick Co., Frigidaire Corp., General Electric Co., General Motors Truck Co., Grand Rapids Cabinet Co., The International Nickel Co., Kelvinator Sales Corp., Kold-Hold Mfg. Co., The Liquid Carbonic Corp., Mack-International Motor Truck Corp., Meyer Body Co., Michigan Alkali Co., Mundet Cork Corp., C. Nelson Mfg. Co., C. J. Tagliabue Mfg. Co., Taylor Instrument Companies, Universal Cooler Corp., The Vilter Mfg. Co., Vogt Processes, Inc., Waltham System, Inc., Whitaker-Upp Co., York Ice Machinery Corp.

Leonard Now Enlarging Plant at Grand Rapids

(Concluded from Page 1, Column 3)

sonnel departments the large building across from the main assembly plant, formerly used as a truck garage and living quarters for the power plant engineer and assistant.

Entire second floor is being converted into an auditorium 43x75 ft. for employees' social activities. This room will have a stage, movie projector, etc., and will be available for dances, parties, and mass meetings. One-half of the first floor will be divided into a waiting room for prospective employees, employment and personnel offices, physical examination rooms, and meeting room for factory council.

Included in the building program is a 60x180-ft. addition to the metal plant to be used for cleaning metal prior to application of porcelain. To eliminate necessity for "farming out" porcelain work to plants outside the city during peak seasons, a large addition to the north end of the porcelain plant is being made. The addition will provide space for a new furnace for "firing" porcelai

Sparks-Withington Co. Sponsors Radio Program

NEW YORK CITY—Jolly Coburn's orchestra and soloists will go on the air over WJZ and 17 NBC blue network stations Sundays 6:15-6:30 p. m. beginning Oct. 14, for Sparks-Withington Co., manufacturer of Sparton refrigerators and radios.

New Type Humidity Control Introduced

(Concluded from Page 1, Column 2)

tion, single and double windows, storm sash, etc. are compensated for, and at the same time relative humidity may be maintained at the highest point desirable for human comfort without risk of damage from condensation.

The system consists of two instruments. One is a modulating or potentiometer type humidity controller, operating in normal fashion to govern the supply of moisture in accordance with the setting of the control. Normal functions are performed until the outside temperature begins to drop.

As the temperature falls, the remote bulb temperature controller—bulb of which is outdoors—through its electrical connection with the humidity control, acts as a limit control.

"In other words," explains Minneapolis-Honeywell engineers, "as the outside temperature goes down, the temperature controller affects the operation of the humidity controller, causing it to call for less moisture and thereby preventing a condition of over-humidity with resultant condensation or frost on the windows and outside walls."

Justice Heads Kelvinator Operations in Argentina

BUENOS AIRES, Argentina—W. J. Justice has been appointed director of the Kelvinator division of the RCA Victor Argentina, which represents Kelvinator in the Argentine Republic.

Mr. Justice's last previous connection was with Kelvinator Appliances Corp., Miami, Fla., where he acted as general manager. Prior to that he was sales manager for the Miami Mayflower distributorship. Mr. Justice has also been connected with Judson C. Burns, Inc., Philadelphia G-E distributor.

Michigan A. S. H. V. E. Opens Season Oct. 10

DETROIT—Michigan chapter of the American Society of Heating and Ventilating Engineers will hold the first meeting of its 1934-35 season today, Oct. 10, according to William F. Arnoldy, manager of Minneapolis-Honeywell Regulator Co.'s Detroit branch and secretary of the society's local section.

Starting at 1 p. m., members will take part in a golf tournament at the Detroit Golf Club. Dinner will be served at the club at 7 p. m., and the meeting will open at 8 o'clock, principal speaker being J. M. Shackleton, liason officer of the Federal Housing Commission, who will discuss the government's home modernization program.

"LOOK - WE CAN SEE ALL THREE TYPES AT THE GENERAL ELECTRIC DEALER'S"

MONITOR TOP—*Matchless Performance!*

THE luxurious convenience and lasting economy of a General Electric refrigerator are now available to every wired home in America.

• The G-E Monitor Top has won universal recognition as the standard of refrigeration excellence. Its record for dependable, trouble-free performance is unparalleled. Figures from a recent survey show that 97% of the G-E refrigerators in use 5 years are still giving satisfactory service to their original owners. Today G-E offers 5 years' protection against failure of the famous G-E Monitor Top sealed-in-steel mechanism for $5...only $1 a year!

• The new G-E Flat-top refrigerator created a new style sensation in electric refrigerators. It is the outstanding value among popular priced refrigerators of the conventional type.

Your customers will, of course, find all the modern convenience features in G-E Monitor Top and Flat-top refrigerators.

FLAT TOP—*Distinguished Styling!*

• The revolutionary new General Electric Liftop at $77.50 (plus freight) is priced far lower than any refrigerator in all General Electric history. It holds more than enough perishable food for the average family and operates on but a fraction of the current needed for standard, conventional type refrigerators. Freezes 20 large ice cubes at a time and is powered with the famous General Electric sealed-in-steel mechanism... the same in principle as the world-famed Monitor Top.

LIFTOP—*Lowest Cost!*

With these three great leaders . . . G-E Monitor Top, G-E Flat-top and G-E Liftop . . . your customers have a choice of refrigerators that are first in dependable performance, first in modern styling, and lowest in cost. Write for details of the General Electric franchise. . . . General Electric Company, Specialty Appliance Sales Department, Section DF101, Nela Park, Cleveland, Ohio.

GENERAL ELECTRIC

All-Steel Refrigerators

COMPANION MERCHANDISE

Electrochef Reports Big Sales Increase

DETROIT—A record increase in business during its five years of existence was announced at the fall sales convention of Electromaster, Inc., maker of Electrochef ranges, held Sept. 17 and 18 at the Book-Cadillac hotel here.

"For the eight months of this year our total sales are exactly 250 per cent greater than during the same period in 1933," said Gerald Hulett, vice president and general sales manager of the company.

The company for the first time experienced no seasonal decline during the summer months and Mr. Hulett attributed the maintenance of the sales curve during the summer months in considerable measure to the new method of putting out electric ranges in this country, known as the trial-optional purchase plan.

The sales convention at which two new range models and a combination cooking unit and simmering unit were shown, was attended by all of their field representatives.

The new ranges introduced were a deluxe model (K-64) and a smaller model the KS-43 designed to meet the smaller purse. The deluxe range, priced at the factory at $109.50 features a large oven. It is very much like their base model the K-44 with additional conveniences. The KS-43 is priced at the factory at $59.50.

Radio Manufacturers Decide to Operate Under Nema Code

NEW YORK CITY—The report of the special code committee of the Radio Manufacturers Association, headed by Capt. William Sparks, recommending that it would be to the best interests of the radio industry if the manufacturers operated under the electrical code with an independent code administration, was accepted by the board of directors at a meeting at the Hotel Commodore, recently.

National Electrical Manufacturers Association will administrate the electrical code as far as the electrical industry is concerned, and the Radio Manufacturers Association will have an independent administration covering the radio industry, reporting to NRA headquarters at Washington.

The "Five-Point Plan" for trade development was discussed in detail at the meeting.

Automatic Washer Names Seattle Distributor

SEATTLE, Wash.—Ben Franklin Electric Co. of this city is now distributor for Automatic washers and ironers in the state of Washington, Automatic Washer Co. of Newton, Iowa, announced recently.

Oil Burner Campaign Opened in Chicago

CHICAGO—Distributors of oil burners and heating oil last month opened a huge cooperative advertising campaign to promote the idea of oil heat in this territory.

In addition to the newspaper campaign which will be used throughout the fall season, a huge quantity of folders have been prepared for distribution by individual dealers, and more than 2,000 5-ft. banners have been made for use on oil trucks, filling stations, and other company property.

The campaign is being sponsored by the Chicago Oil Burner Association and the Chicago Burning Oil Distributors Association, and is an aftermath of a year of intensive selling of gas heating by the local utilities.

The folder has been prepared for individual dealer imprinting with the copy stressing "you can afford automatic heat with oil."

Banners 5 ft. long and 2 ft. high will carry the message, "oil is a better fuel at any price—heat with oil—costs less."

In cooperation with the special sales drives that are being staged by the oil burner dealers, 50,000 reprints of the newspaper advertising will be used by salesmen in their call on prospects.

Faurie Joins Delco's Promotion Force

ROCHESTER, N. Y.—George Faurie, formerly of the sales promotion department of General Appliance Corp., New York City, has joined the sales promotion department of the Delco Products Co. factory organization here.

They Must Have Tuned in China

Two of the Ted Healy stooges forget all about pretty Barbara Read as they get a faraway station on a new Grunow set.

GraybaR Announces a New Appliance Policy *built around the Graybar Tag . . . .*

FOR nearly twenty years Graybar has been a national distributor for many well-known electrical appliances. It has also designed, developed and promoted its own major lines, first as Western Electric Supply Department and since 1926 as Graybar.

Graybar Electric is essentially a distributing organization and has successfully functioned as such since 1869. Its 74 distributing houses equipped with the machinery and men for economical distribution, are peculiarly fitted to serve appliance manufacturers and dealers alike as is no other company in America.

Effective at once, Graybar announces a new plan of appliance sales and distribution. That policy is:

First: The distribution of the better known appliance and radio lines of manufacturers who have a reputation for quality and sound value. These lines will be sold under the manufacturers' trade names.

Second: The continuation of sales policies that will insure living profits for dealers.

Third: The development of Graybar sales promotion plans that will fit into the manufacturers' plans and advertising to insure sales volume for smart dealers.

Fourth: The use of the Graybar Tag on appliances and radio sold through Graybar dealers. The Graybar name is one of the best known in the electrical industry. Advertising is keeping it important to people who buy and people who sell. The Graybar Tag is a symbol of quality and integrity and, placed on an electrical appliance, it stamps that device as different from any other on the market. Such an appliance has a three name guarantee—(1) the dealer's; (2) the manufacturer's; and (3) that of the Graybar Electric Company—world's largest distributor of electrical equipment.

If you are a manufacturer or dealer the new Graybar policy is of sufficient interest to you to warrant your writing for further details. Address the Graybar office nearest you or write direct to the Graybar Electric Company, Graybar Building, New York, N. Y.

OFFICES IN 74 PRINCIPAL CITIES

SPECIAL SERVICES NOW OFFERED TO GRAYBAR DEALERS. Graybar Poster Service, Window Displays, Model Kitchen Information, Newspaper Copy Service, Radio Talks, Publicity, Other Sales Helps.

LEADING MANUFACTURERS WHOSE LINES ARE DISTRIBUTED BY GraybaR

CLOCKS *"Revere"*—Revere Clock Co. *"Telechron"*—Warren Telechron Co.

CLOTHES WASHERS *"Meadows"*—The Meadows Corp. *"Thor"*—Hurley Machine Co.

COOKING APPLIANCES *"Everhot"*—The Swartzbaugh Mfg. Co. *"Grill-Master"*—Steel Materials Co. *"Manning Bowman"*—Manning Bowman & Co. *"Nesco"*—National Enameling & Stamping Co. *"Proctor"*—Proctor & Schwartz Elec. Co. *"Star-Rite"*—Fitzgerald Mfg. Co.

HEATERS (Portable) *"Arvin"*—Noblitt-Sparks Industries, Inc. *"Everhot"*—The Swartzbaugh Mfg. Co. *"Manning Bowman"*—Manning Bowman & Co. *"Markel"*—Markel Electric Products, Inc. *"Proctor"*—Proctor & Schwartz Elec. Co. *"Sunbeam"*—Chicago Flexible Shaft Co.

IRONS *"American Beauty"*—American Electrical Heater Co. *"Manning Bowman"*—Manning Bowman & Co. *"Marion"*—Rutenber Electric Co. *"Proctor"*—Proctor & Schwartz Electric Co. *"Star-Rite"*—Fitzgerald Mfg. Co. *"Sunbeam"*—Chicago Flexible Shaft Co.

IRONERS *"The Eldredge"*—National Sewing Machine Co. *"Meadows"*—The Meadows Corp. *"Thor"*—Hurley Machine Co.

LAMPS *"Mazda"*—General Electric Co.

MIXERS AND EXTRACTORS *"Culinaire"*—The P. A. Geier Co. *"Gilbert"*—The A. C. Gilbert Co. *"Hamilton Beach"*—Hamilton Beach Mfg. Co. *"Magic Maid"*—The Fitzgerald Mfg. Co. *"Sunbeam"*—Chicago Flexible Shaft Co.

RADIOS *"Colonial"*—Colonial Radio Corp. *"Radiotrons"*—R. C. A. Radiotron Co.

RANGES *"Graybar-Crawford"*—Walker & Pratt Mfg. Co.

REFRIGERATORS *"Kelvinator"*—Kelvinator Sales Corp. *"Leonard"*—Leonard Refrigerator Co.

SEWING MACHINES National Sewing Machine Co.

SUNLAMPS *"Miller Sunlites"*—The Miller Co.

TABLE APPLIANCES *"Everhot"*—The Swartzbaugh Mfg. Co. *"Hankscraft"*—Hankscraft Co. *"Manning Bowman"*—Manning Bowman & Co. *"Proctor"*—Proctor & Schwartz Elec. Co. *"Silex"*—The Silex Co. *"Star-Rite"*—Fitzgerald Mfg. Co. *"Sunbeam"*—Chicago Flexible Shaft Co. *"Toastmaster"*—*"Wafflemaster"*—Waters Genter Co.

VACUUM CLEANERS *"Royal"*—The P. A. Geier Co.

Complete line of Apex Appliances handled by Graybar in Pittsburgh, Pa., and Youngstown, Ohio

Carson Pirie Scott Puts Radio Movie In Store Window

CHICAGO—Carson Pirie Scott & Co., department store, recently arranged a window display which included, in addition to representation of Stewart-Warner "Magic Dial" and short wave sets, a motion picture projector showing the film "Radio Magic."

By means of the film prospects were shown the development of short-wave transmission, the characteristics of short-wave broadcasting, the manner of tuning, the kind of receiving set required, and examples of types of short-wave programs available to listeners.

The entire display was obtained as a unit, on a rental basis from the Stewart-Warner sales promotion department.

120 G-E Oil Furnaces Installed in College

SCHENECTADY—Installation of an unusual new central heating plant, consisting of a battery of 120 General Electric oil furnaces, is nearing completion at Mt. Holyoke College, South Hadley, Mass.

The furnaces are arranged in 24 groups of five units each. The number of groups in operation at any time is automatically determined by steam demand, which is also automatically controlled by outside dry-bulb temperature.

To take care of requirements not affected by outside temperature—such as interval heating of classrooms—the operator at the central plant has close and accurate control over the admission of steam to any of the 24 college buildings heated from the central system.

Regardless of the total steam demand, only enough furnaces are "on" to take care of that demand.

B & O Radio, Inc. Named Sparton Set Distributor

NEWARK—B. & O. Radio, Inc., 23-25 Sussex Ave., distributor in this territory for Norge refrigeration, oil burners, washers, and other allied products, was recently appointed as exclusive distributor in northern New Jersey of Sparton radio products, according to Ben Oppenheim, head of the wholesale organization.

Portland Furnace Firm to Handle Norge Oil Burner

PORTLAND, Ore.—Appointment of the Mueller Furnace Co. of this city as authorized sales and service agents for the Norge Whirlator oil burners has been made by the North Coast Electric Co., also of Portland, recently appointed local distributor.

A. L. Morris, manager of the Mueller organization, and his associates, R. T. Jacobson and Fred H. Baxter, have been identified with the heating business 14 years.

G-E Radio Features Special Tuning-Band

SCHENECTADY — Twelve new models, featuring standard and short-wave reception in every set plus "all-wave" and additional tuning-bands in eight of the models, are included in the 1934 fall line of radios recently announced by General Electric Co. In addition, 19 models previously announced will be continued into the new season.

The new models—built around six new superheterodyne chassis in five, six, eight, 10, and 12-tube types and a seven-tube battery-operated type—include four table models, six consoles, and two automatic radio-phonograph combinations. All sets receive both broadcast and short-wave signals.

Two are standard and short-wave models, the rest of the line being all-wave receivers covering at least 540-18000 kilocycles. Of these, three models have one additional band and three others have two additional bands over and above those required by the RMA all-wave definition.

In the new multi-band models are three improvements designed to lend added simplicity to the tuning of the shorter wave-length bands. First is dual-ratio tuning, by means of which the tuning knob, when pulled out slightly, provides a change in ratio from 10:1 to 50:1 and thus affords convenient vernier tuning.

Next is band indicators, by means of which a letter, such as "A," "B," or "C," appears in an aperture at the bottom of the new square-shaped airplane-type dials in order to indicate which band is being tuned.

Third feature is "stop-watch" band-spread dials, by which an auxiliary pointer—very much like the sweep-second hand of an electric clock—"spreads" the short-wave bands through a much larger arc than that covered by the customary pointer and makes possible accurate recording of dial settings for many short-wave stations.

The five-tube chassis is available in two models, a table-type and a four-leg neo-classic console, listing in the east for $39.95 and $54.95 respectively. Two models of the six-tube chassis are also being made. One is a semi-cathedral table-type receiver, listing in the east at $69.95, while the other is a six-leg console selling at $89.95 in the east.

For the eight-tube chassis there are three models—one listing in the east at $97.50, another at $119.50, and a third at $250. Former is a semi-cathedral table-type cabinet of moderne style, the second is a semi-moderne two-tone console with oriental wood veneers, and the third is low-console automatic radio-phonograph combination.

The 10-tube chassis is made only in a six-leg semi-moderne console, with a 10-inch electro-dynamic speaker. It lists in the east at $149.50. The deluxe 12-tube chassis is available in two models, the first being a console with neo-classic doors and listing at $225 in the east, the other a console-type automatic radio-phonograph combination with home-recording equipment, listing at $375 in the east.

Seven-tube chassis for air-cell battery operation is a two-band standard and short-wave receiver.

Frigidaire has never believed in half-way measures and never will.

That's why General Motors has spent millions of dollars in research that Frigidaire may continue to be known as the leading product of its kind. That's why millions of dollars have been invested in new plants and equipment that each Frigidaire may be as nearly perfect as it can be made. That's why the vast purchasing power and the engineering skill of General Motors have been called upon to make Frigidaire, in every sense, a true General Motors value.

As a result, Frigidaire today enjoys a reputation that is clearly reflected in Frigidaire sales. Aggressive in its policy of product improvement—aggressive in its advertising and merchandising methods—Frigidaire has steadily strengthened its position in the industry while company after company has come into the business and gone out again.

Frigidaire's two-fisted leadership—in quality—in value—and in sales—has won the approval of the foremost retail outlets of the industry. These dealers have found that Frigidaire is the electric refrigerator that sells easily and stays sold—the electric refrigerator that brings in real profits.

Frigidaire's 1935 sales program is being formulated now.

It will be the most comprehensive in the company's history. It will embody new ideas and plans of the greatest importance to every man interested in the profits to be made from the sale of electric refrigerators.

If you, too, like General Motors, have "an eye to the future—an ear to the ground," it will pay you to get all the facts about Frigidaire's 1935 sales program. Write to Frigidaire Corp., Subsidiary of General Motors Corp., Dayton, O.

Frigidaire

A PRODUCT OF GENERAL MOTORS

THE WORLD'S MOST POPULAR ELECTRIC REFRIGERATOR

AIR CONDITIONING

Detroit Fur Shop Utilizes Compressor Used In Storage Plant for Comfort Cooling

By Phil B. Redeker

DETROIT — The Annis Fur Shop here has provided comfort cooling for its patrons at low cost by installing an air-conditioning system in which the compressor which supplies refrigeration for the fur storage vault is utilized.

Installation of the air-conditioning equipment was made by the local office of Carrier Engineering Corp., under the direction of E. S. Jones.

The compressor for the fur storage had previously been running during the night only. This was done (1) because the local utility company offers a cheaper power rate for night operation; (2) it was found that by bringing the temperature down to about 35° F. at night, there was about a 10° F. temperature rise during the day (the vault being heavily insulated) and this much temperature variation is said to be good for furs which are being stored.

Thus the compressor was available for other applications during the day time.

Carrier engineers branched a line off of the liquid ammonia line, and added a couple of shut-off valves (for manual operation) by means of which the refrigerant was directed to a shell-and-tube water cooler.

This shell-and-tube water cooler refrigerates about 80 gals. of water per minute to a temperature of 40° F. The water is then pumped through coils in the Carrier air conditioner which is also located in the basement. In this conditioner the air is also filtered by means of Owen-Illinois filters.

Air distribution is accomplished by means of a Carrier "ejector" type system. A riser duct runs up through a stockroom at the rear of the store, and under a balcony which is directly in front of the stockroom.

At the front of the balcony, on either side, are two "Blue Ribbon" slotted outlets shooting the conditioned air into the shop proper at high speeds.

The system is an example of the compietely recirculated-air type, no outside air being introduced. Carrier engineers figured, however, that there was enough door openings to introduce a proper quantity of fresh air by what is known as "infiltration."

Return air is taken from the floor at the rear through a big grilled opening.

New American Purifier Humidifier Employs Novel Principle

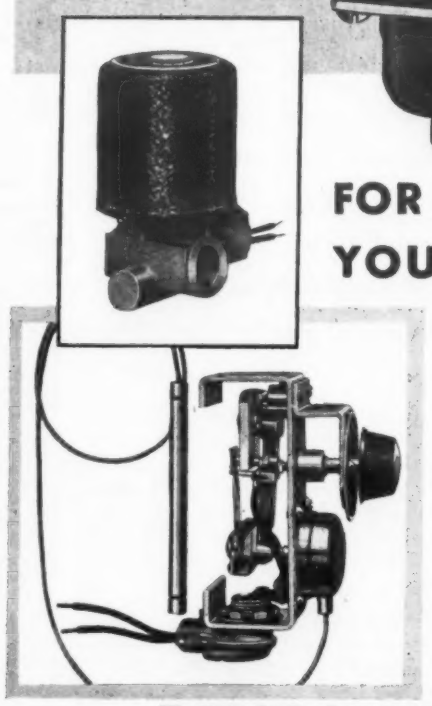
NEW YORK CITY—American Air Purifier Corp. is manufacturing a portable humidifier in which there is no utilization of a mist or a spray.

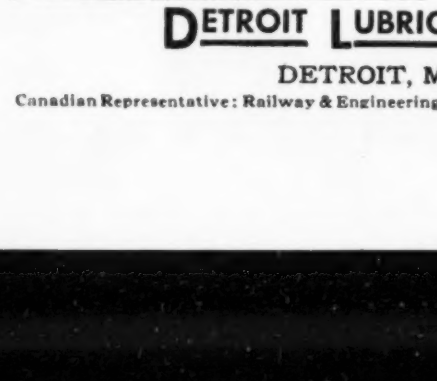
Its humidifier consists of a cylindrical casing which encloses a wheel of thin metal vanes, this assembly resting in a pan of water. On top of the pan with its center just above the center of the water wheel is mounted a motor with reversed fan blades.

Air is drawn into the humidifier, passed over the motor and through the water wheel. The force of air causes the wheel to revolve, the vanes dipping into the water and becoming wet. The air passes over and evaporates the water on these vanes.

DEPEND ON "GENUINE DETROIT" CONTROLS

FOR BEST RESULTS ON YOUR INSTALLATIONS





● **No. 250 DUAL PRESSURE CONTROL SWITCH** —For low side pressure control and high side pressure cut-out. Low side range 20" vacuum to 40 lbs. Differential adjustable, 5 lbs. to 25 lbs. High side cut-out—Range No. 1 adjustable from 125 lbs. to 200 lbs., differential 20 lbs. Range No. 2 adjustable from 105 lbs. to 160 lbs., differential 20 lbs.

● **No. 683R SOLENOID VALVE**—Electrically controls the flow of refrigerant. Draws only 13 watts. Used on liquid line on air conditioning and commercial refrigerating installations. Also furnished for use on suction lines.

● **No. 261 CABINET THERMOSTAT**—For enclosure type heating, cooling, air conditioning units. Thermostat usually is mounted inside cabinet, knob and dial for temperature adjustment being the only externally mounted parts. All electrical wiring is done at factory, eliminating thermostat connections on the job.

DETROIT LUBRICATOR COMPANY

DETROIT, MICH., U. S. A.

Canadian Representative: Railway & Engineering Specialties, Ltd., Montreal, Toronto and Winnipeg

Philadelphia Utility Sells 31 Conditioners In Special Campaign

PHILADELPHIA—Thirty-one air-conditioning units with a total of 176 hp. were sold in Philadelphia and suburban divisions during the first air-conditioning campaign held by the retail sales department of the Philadelphia Electric Co. recently.

The Charles J. Russell plaque, offered for competition among the district and division offices, was won by central district. The plaque is to be awarded in successive campaigns "to the district or division whose employees have rendered the most effective assistance to the retail sales department in its major load building activities."

Maurice Townsend of central district and Fred Naile of Schuylkill division won individual distinction. Townsend attained 486 per cent of his quota to take the grand prize and Naile carried home the suburban prize.

In order to bring competitive spirit into the campaign a "Relief Expedition" was organized to rescue "Ready Kilowatt," marooned at the South Pole. The two competing parties were the Penguin expedition, including all retail salesmen in the Philadelphia division, and the Albatross expedition, representing the five suburban divisions, including the Susquehanna Utilities.

C & O R. R. to Present Air Conditioning Movie

CLEVELAND—Air conditioning of coaches, parlor cars, sleepers, diners, and club cars plays an important part in a motion picture now in process for the Chesapeake & Ohio Railroad, according to Sound Pictures, Inc., which is producing the picture.

The C & O pioneered in the air conditioning of its cars, offering the public the first completely air-conditioned train in America.

The new motion picture will be completed about the first of the year, and will be available for booking shortly thereafter.

One feature of the picture which will make it of particular interest is the fact that the actual operation of the air-conditioning equipment will be made plain through animated drawings produced under the supervision of J. R. McCrory, animation expert and art director for Sound Pictures, Inc.

Air Conditioning Pays, So Optician Extends System

CINCINNATI—W. N. Benedict, optician here, a year and a half ago installed a Frigidaire air-conditioning system in two of his examination rooms. So favorable has been the reaction of patients that the system is to be enlarged to condition two more examination rooms.

Of air conditioning, Mr. Benedict says, "I feel that in a profession of this kind where examinations must be made with care and understanding, everything that can be done to insure relaxation and comfort of both patients and opticians makes for accuracy in diagnosis and more permanent treatment."

The system in the Benedict establishment is such that the conditioned air is moved into the examination room in ducts. Efficient operation is possible as the rooms are small and without natural light.

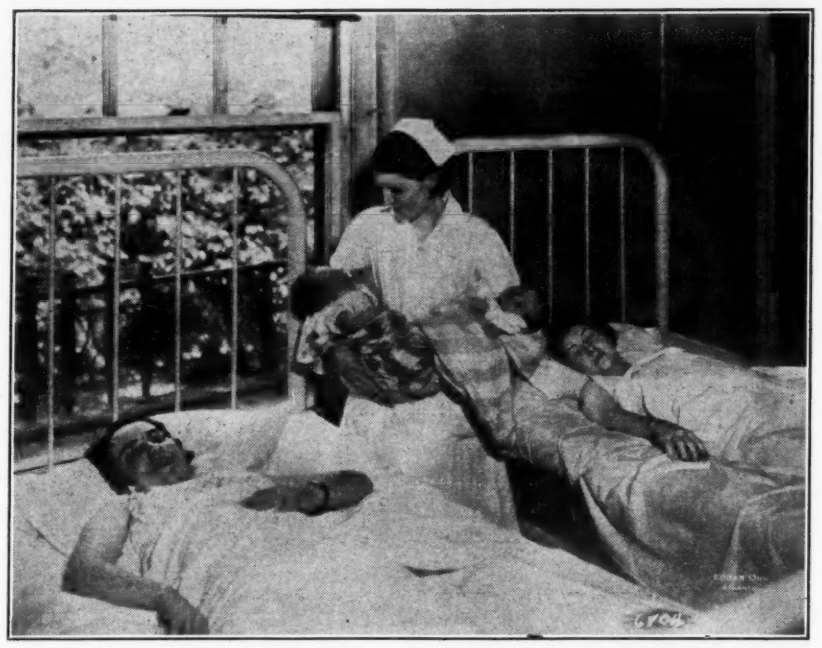
Scranton Radio Station Installs Air Cooling For Studios

SCRANTON, Pa.—To provide comfortable working conditions for its performers and operators during the summer, radio station WGBI here recently installed a 3-hp. Frigidaire conditioning system to cool its studios, according to Harry C. Glou, president of the Automatic Equipment Co., Frigidaire outlet in this city which sold the equipment.

There are three studios at the station's headquarters, and cooling for them is provided by three model S-3 cooling units powered by a Frigidaire 3-hp. water-cooled compressor. Only one studio is used at a time, and when it is occupied, doors of the other two are left open to provide cooled air for the reception hall outside.

A solenoid valve operated by three and four-way switches is connected to the S-3 unit of each studio, so that each unit may be controlled from either the studio being cooled or from the main studio, which is also the control room, states Mr. Glou. The cooling units are located outside of their respective studios, and conditioned air is recirculated by a duct system for each room. Fresh air is introduced by a separate system previously installed.

First Air Conditioned Babies



The infants shown in the picture were born in the air conditioned (by Frigidaire) obstetrical room of the Crawford W. Long Memorial Hospital, Atlanta, Ga. Air conditioning protects the infants from excessive heat.

G-E Conditioners Installed In Omaha Establishments

OMAHA—A beauty salon, restaurant, and insurance office are among the Omaha establishments which have purchased G-E air-conditioning equipment in this territory this summer.

Two 15-hp. G-E compressors were installed in the Lorenzo-Maison, beauty parlor, to maintain the temperature of the 115,000-cu. ft. establishment at 15° below outside temperature. Air is distributed through ducts concealed in the ceiling. Cost of the installation was $6,000.

In the 10-room offices of the Grain Dealers National Mutual Insurance Co. were installed two G-E AA-3 air conditioners with a 10-hp. condenser and a G-E humidifier, total cost being more than $3,000. Sixty persons are employed in the office. This and the beauty salon installation were made by Omaha's Electric Housekeeping, Inc.

In Falls City, Neb., the Gearhart Radio & Electric Co. installed a 7½-hp. G-E store cooler to condition air in the 16,000-cu. ft. Brown Cafe.

Monongahela Power Co. Makes First Installation

FAIRMONT, W. Va.—Reported by the Monongahela West Penn Public Service Co. here as the first major air-conditioning installation in its territory is that in Roger's Pharmacy, Morgantown. The system, powered by a 10-hp. Frigidaire compressor, cools, cleans, dehumidifies, and circulates the air. It is designed to maintain an indoor temperature 12° below that outside. Cost of the installation was approximately $3,000.

Air Conditioning Bureau Organized in Spokane

SPOKANE, Wash.—Bureau of Air Conditioning, composed of distributors and dealers in the air-conditioning and mechanical heat equipment industries has been organized in this city to take charge of the display and demonstration at the Air Conditioning Exhibition to be held here soon. D. H. Knapp and H. C. Bender are president and secretary, respectively.

Fifty Spokane firms will participate in the exhibition, which will be handled by a committee headed by L. K. Vallandingham.

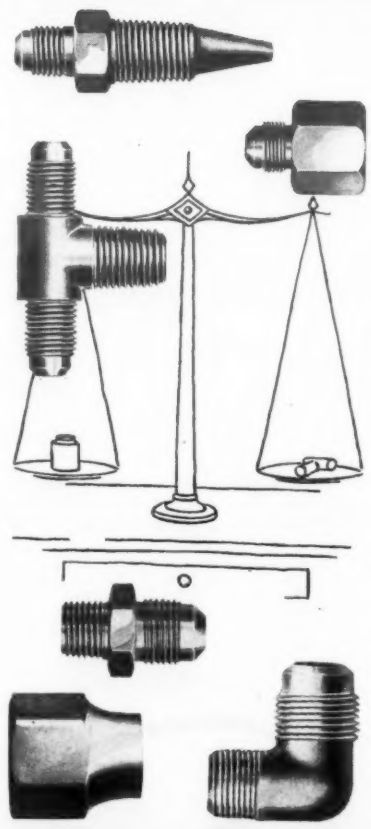
George Johnson, Ralph Nelson, and Louis Weiss compose the committee in charge of rules governing exhibits. The housing committee consists of F. L. Croteau, F. E. Finney, and F. J. Fallquist.

User of Air Conditioning Boosts It Over Radio

SAN ANTONIO, Tex.—"I feel justified, due to my experience with an air-conditioned store, to prophesy that within 10 years or less the public will practically insist that any place at which they shop be air conditioned," stated Gilbert Lang, manager of Frost's, a completely air-conditioned store, in a recent radio talk.

"The south is feeling more and more that a properly air-conditioned store is the only place to shop. Shopper and salesperson alike are more relaxed, less given to fatigue, and more comfortable in an air-conditioned store. The shopper does not rush and the sales force is ever alert and more eager to please," he said.

BUILT RIGHT—TO STAY TIGHT



Weighed

in the scale of performance during a period dating from the very inception of the industry, Commonwealth Brass Seepage-Proof Fittings have always been found full value.

Commonwealth Fittings are not sold by the pound, but by the piece, and each piece is manufactured to render 100 per cent service. Each and every Commonwealth fitting intended for refrigeration service must have passed 100 per cent inspection before it leaves our plant.

Weight alone is not sufficient. The accuracy of threads, seats, dimensions must be absolute in order to secure complete interchangeability. All these important features are safeguarded in Commonwealth methods of manufacture, so that the user may rely on perfect fittings.

Entrust your fittings business to Commonwealth if you would install trouble-free, seepage proof connections on either Household or Commercial units.

COMMONWEALTH BRASS CORPORATION

COMMONWEALTH AVE. AND G.T.R.R.

DETROIT

More than 900,000

HOUSEHOLD MECHANICAL REFRIGERATORS

have been finished with

DULUX

REG. U. S. PAT. OFF.

SALES of DULUX-finished refrigerators are climbing up and up and up—and they aren't going to stop! Yet remember this: *It was only about a year and a half ago that DULUX was used as a finish on refrigerators for the first time; today more than 900,000 household mechanical refrigerators have already been finished with DULUX.*

Approval of this remarkable finish by manufacturers, dealers, and housewives alike has made this record possible. With such universal acceptance, sales of DULUX-finished refrigerators cannot help mounting every day.

You should be getting your share of this steadily increasing business. And you can . . . by simply telling the facts to your housewife prospects. Here are some of them. Note them carefully; they will help you sell.

After three years of constant experimenting and studying, du Pont chemists perfected DULUX—a finish that is as hard as an inorganic finish, and yet so flexible that even the blows from a hammer do not harm it. This means that when a woman buys a DULUX-finished refrigerator, she can be sure that the surface will not crack or chip or flake easily.

Then there's the glowing, pure white whiteness of a DULUX-covered surface. As white as a blanket of newly fallen snow. As white as the fleeciest of clouds . . . the whitest of ermine. "The whitest white you ever saw!" It will not yellow or become discolored as conventional, standard finishes must.

There is a new booklet called "DULUX for Refrigerators" that describes the unusually severe tests that DULUX had to undergo before du Pont was ready to use it commercially. You will find many useful selling facts in its pages. Send for it. It's free. Simply write E. I. du Pont de Nemours & Co., Inc., Finishes Division, Wilmington, Del.

These facts

ABOUT DULUX HELP YOU SELL REFRIGERATORS

1. **A hard, but flexible and tenacious finish that does not chip or crack under hard blows and surface tension. It is the result of a new, elastic vehicle—a du Pont development.**
2. **A durable finish that resists moisture and protects against corrosion.**
3. **A finish with exceptional resistance to household oils, greases, acids and abrasives.**
4. **A beautiful finish with a texture, depth, and gloss unknown in other finishes.**
5. **A finish with almost perfect whiteness which remains white under long outdoor or indoor exposure.**

DU PONT REG. U.S. PAT. OFF.

DULUX *for refrigerators*

REG. U. S. PAT. OFF.

ENGINEERING

Westinghouse Uses Photo-Tube To Match Cabinet Finishes

By Ralph Bisbee, Chief Inspector
Westinghouse Electric & Mfg. Co.

ONE of the most difficult problems in the manufacturing of matching colors—has been solved by engineers working with a new application of the photo-electric cell. True color matching has long been a source of trouble, ever since the extensive use of porcelain exterior surfaces has been adopted for household appliances and kindred products.

With production stepped up to the point where it is necessary to put out hundreds and thousands of units a day, the problem of color matching became a vital one, until Westinghouse engineers created an instrument that is not only more reliable in its sensitivity to shades of color than is the human eye, but also practically "foolproof."

In the Westinghouse color matcher, colored light is sent to a sample, and the amount diffusely reflected is sent to a photo-tube which controls an amplifying tube, and an indicating micro-ammeter.

Three color filters provide red, green, and blue light. The voltage regulator eliminates the variability of illumination. The color match readings are relative, being in all cases referred to a standard which can be one of the samples.

The apparatus used can be connected to 110 volts a.c., and after this connection is made, the manipulation of three controls is all that is necessary to set up the outfit for operation.

The location of the apparatus depends entirely upon the material being matched. If it is easier to handle the material, secure the matcher in a table flush with the top and lay the work upon it. If the material is large and bulky the matcher is portable enough to place upon the object.

Fig. 1 shows a diagram of the optical system of the color matcher.

Optical System of 'Color Matcher'

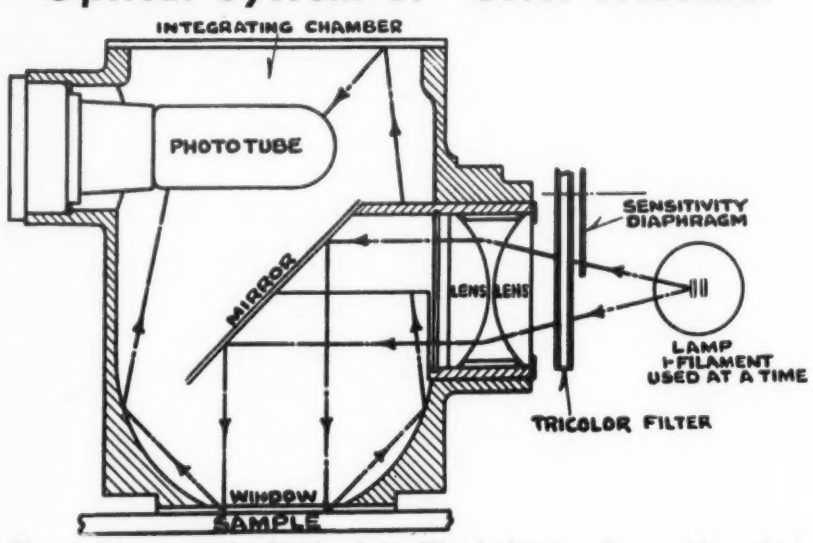


Fig. 1. Diagrammatic sketch of the Westinghouse color matcher which practically eliminates the human element in matching cabinet finishes.

Glossy and Dull Surfaces

One of the difficulties in matching colors is the effect of gloss, which is the specular or mirror reflection. It is usually essential to match colored surfaces without regarding gloss, and to "see" only the actual hue or diffused color, as contrasted with the reflected light.

With visual matching, the elimination of the effects of gloss is particularly difficult. The eye naturally takes it into consideration; a gloss appears brighter due to the reflection of all colors at the shiny surface.

In the Westinghouse color matcher, the direct (glare) reflection never gets to the photo-tube, and the readings take no account of the gloss. This is a practical advantage in allowing the accurate matching of materials with very different types of surfaces.

The optical system is shown in Fig. 1. Two typical rays of light from the lamp filament are shown. These pass through the color screen, lenses, 45 degree mirror, and through the window to the sample.

A sample having a gloss surface reflects the ray right back to the mirror and through the system back to the lamp. The true color of the sample diffuses the light, typically shown by the dotted, and dot and dash lines, reaching the photo-tube by multiple reflection in the integrating chamber.

This material is soft, and may become scratched, but this will not interfere with the use of the instrument.

General Color Matching

Objects are color-matched if they look alike to the eye when viewed in the light from any source. Two red fabrics will not appear red under a mercury-arc lamp which is deficient in red rays.

If they match, however, the two will look alike under this intense blue-green illumination. It is to be expected that under some special light source objects will appear like each other in any combination of light colors.

An exact color match cannot be made from an inspection under a single source of light. A single reading gives an aggregate effect and does not tell, for example, whether the sample is strong in the blue or in some other part of the spectrum.

The problem of matching colors requires the matching at several points along the visible spectrum of color. In most cases, comparing the color of the sample with the standard at three points, such as red, green, and blue, is sufficient.

Color matching done this way is much simpler, both in principle and in operation, than color analyzing which requires dozens of points taken along the visible spectrum.

According to some of the well-known theories of color vision, there are only three major color sensations in the visual perception of color. If they are correct, the basis of a three-color match would be similar to that of the human eye.

The complete visual spectrum scarcely covers a whole octave in the sense that the vibrations from deep red to the far visible blue do not quite have a 2 to 1 ratio.

This somewhat simplifies the problem of color matching in allowing the use of three definite, properly-spaced colors, at which measurements are made.

As a comparison, the average human ear can distinguish over 10 octaves of musical tones. To measure the loudness of a sound extending over 10 octaves would not be possible with a three-fold measurement. But within any single octave of sound frequency, three determinations would tell quite accurately the content of that octave.

Actual Matching

The Westinghouse color matcher is designed to be used with the instrument panel in front. Numbers on the dial are provided both right side up and upside down, so that the matcher unit can either be placed on the sample, or the sample can be placed on the inverted color matcher.

In either case it is essential to use (1) an opaque sample so that external light cannot enter, or (2) several thicknesses of a translucent sample, or (3) a sample backed by some opaque material.

It is preferable to use several thicknesses of the same sample, to get the maximum sensitivity. In all cases it is necessary to have the sample completely cover the opening seen through the window.

The Westinghouse color matcher is not a calibrated device and does not give absolute measurements. The device does check two or more samples very closely, but one of the samples must be designated as the standard and the others referred to this standard.

The color matcher dial is marked 0 to 20 with the center 10 as the matching point. By using the large knob the pointer is set on 10 for the sample (to be used as standard) on red light. Run the outfit a short time, until the pointer is fairly steady, remove the standard and put the next sample in place.

If the reading is more than 11 or less than 9, the sample is not a match, and the further it is from 10 the further it is from being a match. In some localities a closer variation than 9 or 11 can be noted, if the voltage supply is quite steady, and free from harmonics. This can be ascertained by noting the fluctuations of the pointer when using the "standard."

It is best to re-check the standard on the matcher, to insure the correct setting of 10, especially if several samples are to be tested, and some time is to elapse between tests.

Results in Actual Use

The color matcher has been used successfully for the past six months in color matching of all Westinghouse refrigerator cabinet exterior vitreous enameled parts.

The refrigeration department was intensely interested in its development while it was still in the research department's hands several years ago. The first instrument completed was sent to Mansfield but it was not successful to use until recent developments were made.

Prior to its inception all color matching was done by the eye, and as a result of personal equation, rejects on the assembly lines on final inspection were excessive. In addition to assembly difficulties, we had numerous complaints from the field regarding the un-uniformity of the color shades of the enameled parts on our cabinets.

Since the color matcher has been in use our rejections on the final assembly line are negligible and our field complaints have stopped.

Up to this time we have only used the color matcher to match white finishes. At the present time we are working with our Newark Works to develop the instrument so that it will be successful for matching vitreous enamel colors such as buff, blue, green, etc.

'Color Matcher' in Use

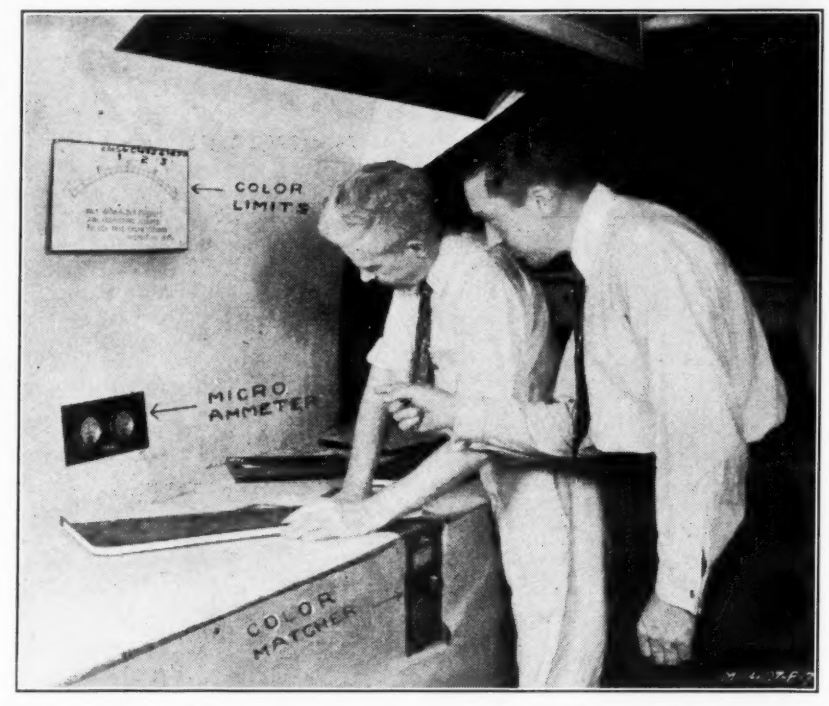


Fig. 2. Westinghouse engineers using the photo-electric cell color matcher.

Crosley Cleans Sheet Metal by Chemicals

CINCINNATI — Chemical science aids the Crosley Radio Corp. here in providing a method of cleaning sheet metal used in construction of Crosley Shelvador and Tri-Shelvador electric refrigerators.

Called the chemical vapor degreasing process, this method for cleaning metal surfaces both washes and dries the metal in one operation and makes use of the chemical trichloroethylene.

Besides being an efficient cleaning chemical, when transformed from a liquid to a vapor state it is much heavier than air. Thus it can be retained in large "bathing" tanks, open at the top, without dissipating the vapor into the air. Loss of vapor is further prevented by means of condensing coils around the top of the tank.

Workmen dip sheet metal, already pressed into required form, into the vapor tank. The metal being cooler than the temperature within the tank, the vapor condenses into liquid trichloroethylene, which, as it runs off the metal, carries with it all grease and dirt.

When the metal becomes as warm as the vapor, condensation ceases and the operation is complete. As the operator withdraws the piece it automatically drys, as the metal has become much hotter than the surrounding atmosphere.

This vapor process is used for cleaning all sheet metal parts before they are transferred to painting, lacquering, and enameling departments.

THE TRADE'S LARGEST FORGED BRASS LINE SHUT-OFF VALVE

AX-13247 Overall Height Open 10-1/4 in.

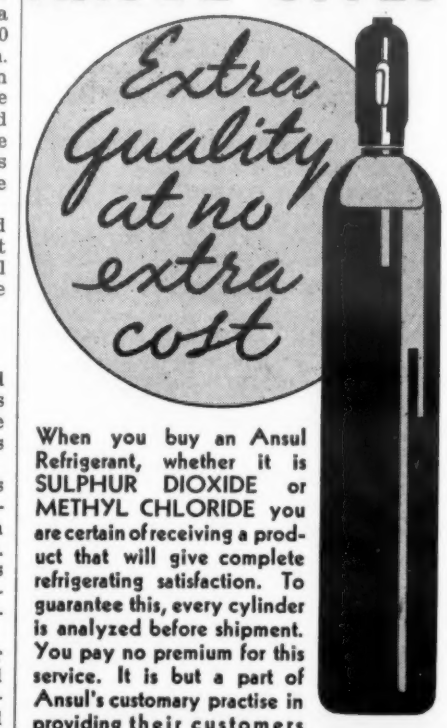
AX-13247 is designed primarily as a line shut-off valve for commercial refrigeration and air conditioning installations. It is furnished with 1-½ in. female I.P.S. threads or with 1-⅝ in. O.D. Tube connection incorporating our patented end. The body is of forged brass. The stem is made of Tuf-Stuf, an extra strong corrosion resisting alloy which will not seal itself to the seat. The valve is double packed.

All Mueller Brass Co. valves and fittings are furnished full flow, equal to inside diameter of tubing used, assuring unrestricted passage of the refrigerant.

Send for our Catalog R-2 illustrating and describing a complete range of valves and fittings, etc. for electric refrigeration work.

MUELLER BRASS CO.
Port Huron, Michigan

ANSUL GIVES



When you buy an Ansul Refrigerant, whether it is SULPHUR DIOXIDE or METHYL CHLORIDE you are certain of receiving a product that will give complete refrigerating satisfaction. To guarantee this, every cylinder is analyzed before shipment. You pay no premium for this service. It is but a part of Ansul's customary practise in providing their customers with the best at all times.

ANSUL CHEMICAL CO.
MARINETTE - WISCONSIN

Reduction in Power Rate Spurs Cincinnati Appliance Campaign

CINCINNATI—Cincinnati Electrical Club has reorganized as the Cincinnati Electrical Association and started an extensive campaign for the promotion of electrical appliance sales. The campaign was influenced by the rate reduction effected by the Union Gas & Electric Co., and the fact that a million dollars in refunds to Union's customers will shortly be in circulation.

Space on more than 200 billboards, seven-column newspaper advertisements in Cincinnati papers, advertising tire covers on city taxicabs and delivery trucks and personal cars of dealers, street car and bus panels, window counter and floor cards, are some of the media to be used in this intensive campaign.

Campaign advertising emphasizes costs of operation under the new rates, which are based on a four-year schedule of gradual reductions. The new maximum is five cents a kilowatt hour, scaling down to two cents. The fourth year will see a reduction to a four-cent maximum and a one and one-half minimum, Union officials declare. The savings to the public over a period of four years, it is estimated, will be approximately ten million dollars.

First meeting of the new association was held at Netherlands Plaza hotel recently. Speaking on the campaign, to a group composed of representatives of every dealer and distributor in Cincinnati, and many factory representatives, were: Eugene P. Zachman, business manager of the association, G. W. Allison of the Edison Electrical Institute, and Mr. Blackman of the Union Gas & Electric Co.

5 Utility Salesmen Sell 321 Units in 8 Months

FAIRMONT, W. Va.—H. H. Powell, T. E. Faust, H. K. Thompson, M. M. Jackson, and Lee Grimm were the five high rankers in the appliance sales department of the Monongahela West Penn Public Service Co., headquartered here, during the first eight months of this season.

Mr. Powell led the others during that period by selling 86 Frigidaires, three ranges, six ironers, and three other appliances. Mr. Faust came second with 74 Frigidaire sales, two ironers, and five other appliances. Mr. Thompson's eight-months record was 40 Frigidaires, one range, three ironers, and one other appliance. Mr. Jackson sold 49 Frigidaires, six ranges, two ironers, and six other items. Mr. Grimm's total is 72 Frigidaires, two ranges, and four ironers.

Total Frigidaire sales by these ace salesmen is 321. Total merchandise sales by the company during the first eight months of 1934 were $80,869, 18 per cent above last year.

South Carolina Fair Plans Electrical Exhibit

NEW YORK CITY — Electrical farm modernization will be promoted in South Carolina through a demonstration exhibit by the Railroad Commission of South Carolina, at the South Carolina State Fair to be held Oct. 22-27.

In answer to a request for information, the General Service Department of Nema sent B. S. Robinson, valuation engineer, Electrical Utilities Division of the Railroad Commission, data on various equipment, together with average connected load, energy consumption per unit per month, per pound, per bushel, etc.

The commission will not sell any specific makes of apparatus, but simply demonstrate the modern need for and the convenience of electricity's multiple uses.

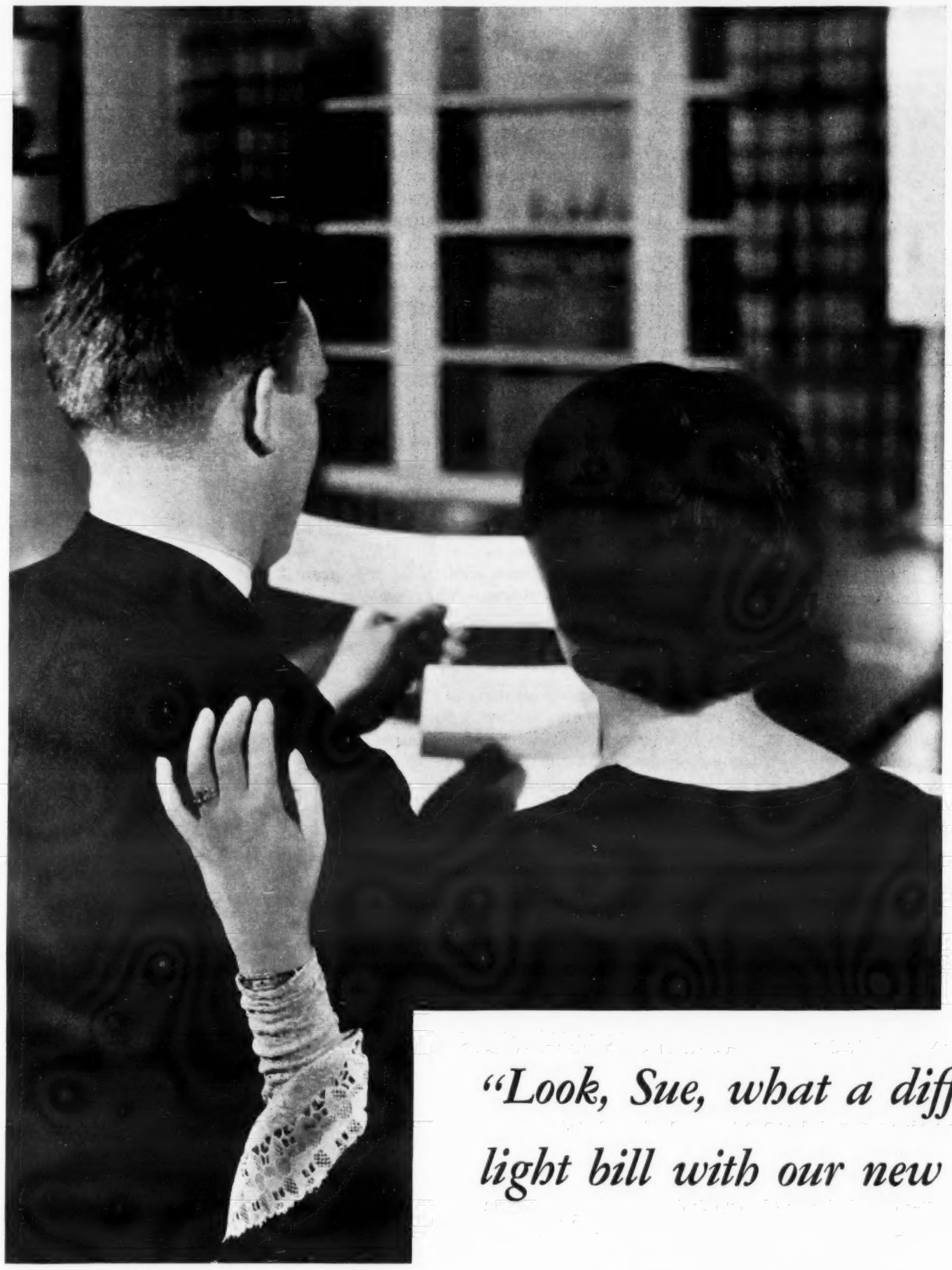
Westinghouse Distributor Takes on Washer Lines

EL PASO, Tex.—Two new washing machine lines—Easy and Maytag—have been added to the stock of the Peterson Lumber & Paint Co., Zenith radio and Westinghouse refrigerator distributor.

The company recently equipped its shop with modern test instruments and carries a complete line of parts for experimenters. Ralph Moore is manager of the service department.

Brown Will Head Sales Of Watermatic Washer

WATERLOO, Iowa.—J. G. Brown, formerly with Westinghouse Electric & Mfg. Co. of Chicago, is now general sales manager of The National Metal Products Co., of this city, manufacturer of the National Watermatic washer.



"Look, Sue, what a difference in the light bill with our new refrigerator"

FOR the first time, the refrigerator replacement market is becoming important. Refrigerators are being replaced, largely because of insulation failure after only a few years of service. Cheap insulating materials become waterlogged after from one to four years of operation. That is why many replacements will be insulated with Dry-Zero . . . it is unaffected by moisture and efficient for the life of the refrigerator. With Dry-Zero insulation, there is a saving in running costs of from 30c a month when new to as much as a dollar and a half.

Dry-Zero offers one of the best selling points any salesman of a Dry-Zero insulated job can use. It is the chief reason why a low temperature can be maintained in the box with a minimum consumption of current. Dry-Zero assures economical operation for the life of the refrigerator. Dry-Zero Corporation, Merchandise Mart, Chicago, Illinois. Canadian office, 687 Broadview Avenue, Toronto, Ontario.

DRY·ZERO

REG. U.S. PAT. OFF.

THE MOST EFFICIENT COMMERCIAL INSULANT KNOWN

ELECTRIC REFRIGERATION NEWS

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To encourage the development of the art.
To promote ethical practices in the business.
To foster friendly relations throughout the industry.
To provide a clearing house for new methods and ideas.
To broadcast the technical, commercial, and personal news of the field.

VOL. 13, NO. 6, SERIAL NO. 290, OCTOBER 10, 1934

Profitable Business

LAST January, President Powel Crosley, Jr., of the Crosley Radio Corp. told his distributors privately that it would pay them in the end to conduct a resale operation through leading department stores *even if that operation were conducted at a loss.*

In presenting evidence to substantiate this position, Mr. Crosley brought out the facts that not only would the carrying and advertising of Crosley refrigerator by leading department stores add prestige to the Crosley name in the minds of prospects, but that it would also help distributors line up dealers in that area. Many dealers in outlying sections of a metropolis, pointed out Mr. Crosley, follow the lead of major department stores when it comes to selecting a line of appliances to put on their floors.

Several Crosley distributors, following this advice, declare that not only were Mr. Crosley's predictions true as to the value of these department store "prestige accounts" in helping their dealer business, but that they were able to make a small profit on the business they did through department stores.

Overhead Not Increased

The long margins demanded by department store merchandising managers before they will stock a line frequently frightens distributors; but this year, at least, it has been the experience of many that even with the small margin they have to work on when doing this type of business, they have found it profitable.

Chief reason why distributors have been able to make money on their resale operations through department stores is that it represents "plus business"—that is, the added volume is not bought at the cost of increased overhead.

Department stores do their own advertising and promotion, and they do a lot of it. They put up their own window displays (although some manufacturers help out here, of their own volition), and they do their own financing. They rarely do their own installing and service, but this, too, works to the advantage of the distributor. The extra work thus sent to service departments—and distributors don't lose any money on this extra business—goes a long way toward helping defray the cost of that department.

Crying Before Hurt

The cry set up at first by distributors that department stores would cut into the business done by their own retail operations apparently has not been entirely justified. "We were crying before we were hurt," distributors will tell you. More than half the department stores selling refrigerators get their sales from floor traffic exclusively. Of the stores which do employ outside salesmen, it has been found that close to two-thirds of their sales are the result of this floor traffic. Close checking by distributorship retail sales managers discloses that only a relatively small percentage of these floor traffic sales are made to families which have been registered on their own prospect lists.

Since they have found that the overlapping of contacts by department store salesmen and their own retail salesmen are comparatively few, several distributors have found it a wise policy to pay their own salesmen an override of 3 per cent on all sales made by a department store to prospects which have been duly registered and filed by the distributor's salesmen within a 30-day period before the sale was closed. By so doing they silence all complaints from their salesmen that they educate prospects only to lose them to these big retail outlets.

Few Repossessions

One thing distributors note with approval about this class of business is the very low percentage of reverts on department store sales. Even though they may encourage the use of the meter plan of payment, repossessions are extremely few. Reason for this state of affairs is the extraordinarily efficient credit and collection departments of these stores. They pass on all sales, and generally can predict with down-to-a-fine-hair accuracy just how able and willing any particular household is to pay its bills.

Biggest disturbing element in the distributor-department store picture at the present time is the difference between finance charges. Frequently the department store's time payment carrying charge (sometimes as low as 6 per cent) is a source of embarrassment to the distributor, who can't obtain such terms on the paper he takes in.

Some distributors have stopped such competition by arranging through their local Code Authority to prescribe standard finance rates for all retailers—including department stores and utilities—in their territory. Others have gone around the obstacle by adjusting f.o.b. prices so as to enable the distributor to subsidize the extra cost of financing his own retail business.

Happier Situation

When department stores first entered the refrigeration business they had the larger manufacturers up in the air, for they started out by selling private brands and "jillopies." Their experience not proving satisfactory with these cheaper and little known refrigerators, department stores have come around to nationally known makes in the last couple of years. So the big manufacturers are now satisfied.

Then it was the distributors who were unhappy. Not only did they lose money on the business they did through department stores, they claimed, but the department stores cut into their own retail sales and those of their dealers. This summer, however, many of these complaints have been removed.

All in all, the place of department stores in the refrigeration picture is now more secure and happy than ever before. They have practically ceased to be one of the industry's *major* sore spots and bones of contention.

WHAT OTHERS SAY

Washing Machine Sales

MAKERS of washing machines for home use report flourishing business. August shipments of machines show an increase of 30 per cent over those of July, and shipments for the first eight months of the year reached the large total of 877,251, 35 per cent more than those of the corresponding period of last year.

Just why washing machine-making prosperity is particularly indicative may not at first appear. Washday comes but once a week and then for only that portion of the population that does not send the family linen to the laundry.

But in that very fact lies a peculiar significance. The family in which the home-maker does her own washing is of that very numerous class near the average of America's homes. Whether a labor-saving machine or the primitive washboard is used has become dependent on family income.

If the number of families that can afford washing machines is increasing rapidly, the indication is pretty definite that the depression is washing out.—*Detroit News.*

LETTERS

Articles on Test Practices

The Sparks-Withington Co.
Jackson, Mich.
Sept. 28, 1934.

Editor:

I have discussed your paper off and on with different refrigeration engineers, and it has been the opinion of several of us that it would be advantageous if you started a series of articles under an engineering heading for the different methods of testing performance of refrigerators and compressors.

I would suggest something along the line of calorimeters, hot rooms, applying the different methods in plain ordinary arithmetic so that it could be understood by a greater number of men working in this industry. I would suggest that you include diagrams, and cuts showing the different types of calorimeters, volumetric efficiency setups, and any other simple methods of testing.

L. C. OSWALD,
Development Dept.

More About the Carrenes

Kinetic Chemicals, Inc.
Wilmington, Dela.
Oct. 4, 1934.

Editor:

Referring to your letter of Sept. 27 concerning nomenclature of refrigerants used by the Carrier Corp.

The writer discussed this particular point with the Carrier people on Sept. 28 and while they have not finally agreed on this nomenclature, it appears that it will be as follows:

Methylene chloride will be called Carrene, or Carrene No. 1; trichloromonofluoromethane, or F-11, will be called Carrene No. 2; trichlorotrifluorethane, F-113, which is adaptable to centrifugal compressors producing relatively high temperatures and humidities for industrial work, will be called Carrene No. 3.

Dielene, $C_2H_2Cl_2$, which had formerly been used for installations of an industrial nature, may be called Carrene No. 4, or possibly just Dielene. This number system is indefinite at this time.

F-11 is suitable for use only in rotary and centrifugal type compressors and could not be used efficiently in a positive acting compressor of a reciprocating type. We always refer to F-11 as trichloromonofluoromethane rather than monofluorotrichloromethane, as we started out by giving the chloro group first. A little later on we will prepare some information for you on the refrigerant F-11 and its application to air conditioning and refrigeration purposes.

R. J. THOMPSON,
Refrigeration Engineer.

What About Condensate?

Strang Air Conditioning Corp.
203 Congress Building
Kansas City, Mo.

Editor:

We note that in the Aug. 29 issue of your publication on page 23, under the heading "Portable Air Conditioners" you print two dealer inquiries, one No. 1819 a New York dealer and the other No. 1820 an Illinois dealer.

In the answer to these dealers you state that every air conditioner must have some provision for draining off condensate—that all self-contained air conditioners are equipped with rubber hose to handle the condenser cooling water—that therefore there are no strictly portable units.

Just in case the New York dealer No. 1819 and the Illinois dealer No. 1820 fail to see our advertisement in your Sept. 26 issue, we would appreciate it very much if you would supply them with the following information:

There is no condensate disposal problem with the self-contained Strang portable room cooler and air conditioner. Condensation is drained by gravity from the condensate receiver in which the evaporator coil is placed, to our evaporation condenser cooler tank in which the condenser coil is cooled by means of the evaporation of the condensate and some additional makeup water.

No rubber hose or plumbing of any kind is required with our portable, self-contained all-electric equipment. The only limitation to the portability of our equipment would be a complete absence of windows, for it can be rolled up to a window and put into operation within one to two minutes, simply by placing the adjustable window panel, which comes with the unit, in the window and pulling the window down on top of the panel and connecting the standard duct to the opening in the back of the unit and to the opening in the window panel.

Through this dual duct, outside air is drawn into the unit to cool the condenser by evaporating the condensate and makeup water and this air laden with its latent heat of vaporization is discharged back out the window. This window connection, of course, also makes it possible to exhaust a certain percentage of the foul room air continuously, thus creating several air changes per hour in the room being conditioned and cooled.

The Strang self-contained, all-electric room cooler and air conditioner mounted on casters can easily be moved from window to window in the same room, or from one room to another on the same floor, and where elevators are available it is strictly portable all over the building.

JOHN J. STRANG,
President.

Editor's Note:

Just how Mr. Strang's portable air conditioner works is not fully explained, nor are we completely sure ourselves of its operating principles.

As we understand it, moisture which is condensed out of the air being conditioned is drained from the evaporator surface to a container of water in which refrigerant condenser coils are submerged—thus constituting a water-cooled condenser.

A fan (in a separate air system from that of the conditioned air) draws outside air from a window panel, passing it through this "evaporation condenser cooler tank," and discharges it to the outside through another opening in the window panel.

This blast of air through the evaporation tank causes quite a rapid evaporation of the water, so that the continual discharge of hot, humid air to the outside atmosphere disposes of both latent and sensible heat removed by the refrigerating machine.

The water requirement of this evaporation tank is considerably greater than the rate of condensation from the evaporator surface, in fact so much greater that the user must replenish the water supply in the tank every day or two.

If the above isn't strictly true, Mr. Strang, will you send us a better explanation?

'Automatic' Ironers

Automatic Washer Co.
Newton, Iowa
Oct. 1, 1934.

Editor:

Our attention has been called to the fact that in one of your recent publications a dealer inquired from you as to the names of various manufacturers manufacturing portable ironing machines. And in your reply you mentioned various companies, but the name "Automatic" did not appear.

Evidently our dealer felt that the Automatic product was being somewhat slighted so he asked why we didn't inform your good company that we also make a full line of ironing machines. Therefore, I am taking the liberty of enclosing one of our recent pieces of counter literature describing briefly the entire line of Automatic ironers. You will notice from this piece of literature that we make two models in the standard table ironer, a portable ironer, as well as an attachment ironer, and we would sincerely appreciate it in the future any time that you have the opportunity of answering a similar question relative to ironers that you mention the Automatic Washer Co. as being a source.

W. J. DICKINSON,
General Sales Division.

Leader in the Field

Electric League of Pittsburgh
405 Westinghouse Bldg.
Pittsburgh, Pa.
Sept. 14, 1934.

Editor:

I believe you have one of the livest and most interesting publications in the entire electrical field.

E. M. MARKS, Editor,
Pittsburgh Electric Leaguer.

List of Manufacturers

The Standard Electric Stove Co.
1718 North 12th St., Toledo
Oct. 5, 1934.

Editor:

Sometime ago I saw in your paper a complete list of domestic electric refrigerators which had been produced since the beginning of the business. Is this list available and could you advise us where we could get a copy of it?

We have the name "Standard Electric" registered in the United States patent office for ranges and we have also applied for registration specifically for refrigeration.

CHARLES A. PIERSON.

Answer: See Sept. 5 issue of ELECTRIC REFRIGERATION NEWS.

Welcome Home

Porcelain Enamel Institute
612 No. Michigan Ave., Chicago
Sept. 19, 1934.

Editor:

It seems good to see your column again appearing in the NEWS.

GEORGE P. MACKNIGHT,
Secretary.

'Mighty Fine'

Holcomb & Hoke Mfg. Co.
Indianapolis, Ind.

Editor:

The ELECTRIC REFRIGERATION NEWS is certainly a mighty fine trade publication.

E. R. WURGLER,
Sales Manager.

COMMERCIAL REFRIGERATION

'Z' Process System Is Installed in Carolina

CHARLOTTE, N. C.—A Z Process quick-freezing system, equipped with Frick refrigeration equipment, has been installed by the Charlotte Fish & Oyster Co. here, which freezes from 400,000 to 500,000 lbs. of fish annually, has a three-story building devoted entirely to wholesaling and retailing fish, and operated a fleet of trucks to haul their products as far as 400 miles from the coast.

Refrigeration machinery is located on the second floor, and includes a Frick 6 by 6 compressor, two additional machines of another make, double-pipe condensers, zig-zag brine cooler, brine pump, and a special brine strainer with five removable screens of Monel metal, suspended from the ceiling.

On the third floor are a seven-ton ice-making tank with an ice crusher and the new Z freezer, which will handle 625 lbs. of fish per hr. There is a low temperature storage room holding 175,000 lbs. of frozen fish, a high temperature storage room, and space for a future low temperature storage room for 350,000 lbs. of fish.

The new low temperature storage is operated on the so-called "jacket system" of preserving frozen fish. The room is refrigerated with 2,000 feet of 1¼-in. coils on the walls and ceiling; it has a concrete floor, and plaster finish over the cork walls. A complete room of light metal was constructed inside this space by laying down 2 by 4's, nailing to them ¾-in. flooring, and extending 2 by 4 studs upward to the ceiling, these studs being about 6 in. from the wall coils.

Galvanized metal was then used to cover the floor and the false walls to within 8 or 10 in. of the ceiling coils. This forms a room within a room, the smaller enclosure being without a ceiling. The metal room is filled with frozen fish, the top being sprayed or glazed with a heavy sheet of ice, to reduce air motion among the fish to a minimum, and so prevent drying.

Arrangement of the refrigerating system is such that directly in front of the machines are four suction headers, so fitted with valves that any one or all of the machines may be operated on any of the following parts of the system: the ice tank, Z-Process freezer, third floor storages, or first floor storages.

Each division of the system is regulated by Frick electric control valves connected to thermostats. Mounted on these columns close by the machines is a series of snap switches, by which any machine is transferred to any desired load.

Wisconsin Institution Is Equipped by Frigidaire

WEST BEND, Wis.—Frigidaire commercial refrigeration equipment has replaced an antiquated refrigeration plant in the Washington County (Wis.) Asylum for the Chronic Insane.

The system was sold, engineered, and installed by Carl Gruetzmacher, refrigeration manager for the West Bend Hardware Co.

The 3-ton compressor provides cooling for a walk-in storage box 26x12x12 ft. in which are stored meats, vegetables, milk, cream, cheese, canned goods, and other perishables. The milk is brought directly from the barns on the asylum farm to be cooled in the storage cooler.

In addition, a 35-ft. kitchen refrigerator is cooled by the same compressor. This box provides the necessary kitchen refrigeration for 150 patients and the asylum staff.

McCray Sales Contest Opened Oct. 1

KENDALLVILLE, Ind.—Salesmen of McCray commercial equipment the country over on Oct. 1 began participation in a sales contest which will close Dec. 15 with the awarding of merchandise prizes to all men doing a specified dollar volume during the 75-day period.

All sales of new and used McCray cases, other makes of used equipment, and commercial machines will count toward awards in the contest. Chain store sales, transfers, and personal property are barred, however, and no credit in excess of $3,000 will be given on any one sale.

Any salesman selling from $2,500 to $2,999 worth of equipment will have his choice of one group of awards. Other prizes will be given to men selling from $3,000 to $3,999 worth of merchandise. Next group is for the $4,000 to $4,999 performers, and other prize selections are offered for succeeding $1,000 amounts up to $10,000.

Wine, Liquor & Beer Show Opens Oct. 15 In Chicago

CHICAGO—The Wine, Liquor, and Beer World's Fair is scheduled to open Oct. 15 at the Sherman hotel here and will continue through Oct. 19.

Exhibits of liquors and beer, and dispensing equipment and bar accessories, will be a feature of the exposition.

Study 'Drying' Effect In Commercial Boxes

Dehydrating effects of the evaporating cycle with direct expansion systems used in small meat storage coolers forms part of a report published recently by the British Food Investigation Board.

Conditions are more complicated in a small cooler refrigerated intermittently by the expansion of a refrigerant gas, the report states, than in larger coolers cooled by coils through which brine at a reasonably constant temperature flows continuously.

In the direct expansion system, temperature and humidity vary with the cycle of operation.

The following conditions were said to have been found in a cooler with an automatic refrigerating system, the operation of which is governed by the temperature within the cooler, and in which air circulation is by natural draft (that is, without a fan):

When the plant is running the temperature of the air in the cooler falls continuously. Air immediately in contact with the coils is cooled and dried and flows downward by reason of its greater density. Coming in contact with the walls of the cooler and meat hung in it, it is warmed, but is not correspondingly charged with water vapor so that relative humidity falls.

When the compressor stops running as a result of the cut-out temperature of the thermostat being reached, the various parts of the cooler become fairly equal in temperature. Movement of air stops to a large extent, and the air in contact with moist objects becomes nearly saturated. During this phase of the cycle, the drying power is, therefore, very low.

Thus the shorter the time that the machine is inactive, the lower will be the mean humidity in the cooler over the period of the cycle, the greater will be the movement of air, and the greater the drying power and effect. It follows that the drying power of the cooler varies with the external temperature.

The extent of this variation was determined. The observations were made on a typical commercial cooler during a period when considerable variation in external temperature was experienced. During this time the cooler was kept empty and closed.

A record was kept of the outside mean temperature, of the temperature inside the box at several points and of the relative humidity of the air in the box and its drying power.

The drying power was found to increase disproportionately with the increased outside temperature, since the movement of air was appreciable only during the running of the unit.

Lectrik-Ice Commercial

Uniflow Mfg. Co., Erie, Pa.

	550MA 550SA	375MA 375SA	440MA 440SA	320MA 320SA	475MA 475SA	475MW 475SW	525MA	525MW	375MA 375SA	410MW 410SW	475MA 475SA	510MW 510SW	375MA 375SA	410MW 410SW	475MA 475SA	510MW 510SW	475MW	510SA	460SW
Compressor Specifications																			
Refrigeration capacity* CH_3Cl models	105	153	190	254	397	476	493	573	664	790	826	1021	1490	1785	2025	2380	2950	...	...
SO_2 models	75	118	150	196	310	372	...	...	510	590	635	785	820	1015	1530	1595	...	1995	2345
Motor size (hp.) CH_3Cl models	⅙	⅙	¼	¼	⅓	⅓	½	½	¾	¾	1	1	1½	1½	2	2	3	...	...
SO_2 models	⅙	⅙	⅓	¼	⅓	⅓	...	...	½	½	¾	¾	1	1	1½	1½	...	2	2
Compressor speed (r.p.m.)	550	375	440	320	475	475	525	525	375	410	475	510	375	410	475	510	475	510	460
Bore (in.)	1⅝	1⅝	1⅝	1⅝	1⅝	1⅝	1⅝	1⅝	1⅝	1⅝	1⅝	1⅝	2	2	2	2	3	2	3
Stroke (in.)	1	1¾	1¾	1⅞	1⅞	1⅞	1⅞	1⅞	1⅞	1⅞	1⅞	1⅞	2⅛	2⅛	2⅛	2⅛	3	2⅛	3
No. of cylinders	1	1	1	2	2	2	2	2	4	4	4	4	4	4	4	4	2	4	2
Quantity of oil in system (pts.)	10 oz.	24 oz.	24 oz.	36 oz.	36 oz.	36 oz.	36 oz.	36 oz.	4½	4½	4½	4½	7	7	7	7	...	7	...
Overall Dimensions (in.)																			
Width	19	19	19	21	21	21	25	25	28½	31	30	31	30½	31½	...	...	...	...	...
Depth	16½	16½	16½	18	18	18	18	18	20½	24	21½	25	22	25½	...	...	...	...	...
Height	12	14	14	18½	18½	18½	18½	18½	22	19	25	21	25	22	...	...	...	...	...

* * *

Compressor
Type of system.....Open
Type of compressor.....Reciprocating
Compressor drive .....Belt
Type of shaft seal...Balanced bellows seal
Cylinder head cooled by.....Air
Type of lubricating system.....Splash
Type of compressor oil...White mineral oil
Viscosity of compressor oil.....150-200

Refrigerant
Refrigerant used.....M models—methyl chloride; S models—sulphur dioxide

Condenser and Liquid Receiver
Condenser cooling medium....A models—air; W models—water
Location of condenser.....On unit base
Type of liquid receiver.....Horizontal

Materials Used
Cylinder block .....Nickel iron
Pistons .....Nickel iron
Condenser tubing .....Copper
Condenser shell .....Copper

Control
Make of control .....Ranco
Type of control.....Suction pressure

Valves
Type of piston valves.....Steel disc
Type of discharge valves.....Steel disc

*Refrigeration capacity given in lbs. of ice-melting effect per 24 hours' operation under these conditions: a suction gas pressure corresponding to a temperature of 15° F. measured in the crankcase, and discharge pressures corresponding to a 90° room for air-cooled units and 80° water for water-cooled units, with a water temperature rise not exceeding 18° F. through water-cooled condensers.

Minneapolis Stores Install New Fixtures

MINNEAPOLIS—Two leading retail meat merchants here have recently modernized their shops with mechanically refrigerated meat display cases.

Iver Hoien's market at 27th Ave., S., has been equipped with three 12-ft. top display cases by the Minneapolis Show Case & Fixture Co. The cases have a white porcelain exterior with black trim and design on the front panel. One end of one of the cases is partitioned off to provide a special section for the display of fresh fish. This section is so arranged that by putting in the wire shelves it may be used for fresh meats or poultry.

The cases are cooled by a fin coil hung in the top of the case and a tube coil placed under the display shelves.

The Minneapolis Show Case & Fixture Co. has also equipped the market operated by Wm. H. Otto, president of the Minneapolis Retail Meat Dealer's Association. Equipment installed consisted of two 10-ft. display cases in white porcelain with green trim. Temperatures of 38° F. are maintained in the cases by one cooling coil in the top of the case and a tube coil under the shelves.

One Couple Buys 2 Sets Of Commercial Fixtures

LITTLE ROCK, Ark.—Mrs. C. Y. Watts of Pine Bluff, near here, decided recently she needed a second-hand meat cooler in her grocery store, so asked her husband—who runs another grocery and meat market in the same town—to come to Little Rock with her and help her make the selection.

They went first to the McCray outlet and met Z. O. Jennings, who had made several calls on them. After looking at a used cooler, Mrs. Watts decided she would like a new display case, too, so bought a model 910 porcelain job. Then she decided against a used cooler, and placed her order for a new McCray model 100.

Then Mr. Watts weakened, said his wife's store should be no better equipped than his own, so ordered a new cooler and display case like those Mrs. Watts had bought. Then of a sudden, they both decided to buy new commercial machines. When the customers left, Mr. Jennings' order pad read: Mrs. Watts—$1,840; Mr. Watt—$1,840.

Midget Montana Bar Is G-E Equipped

BUTTE, Mont.—The Midget Bar, smallest bar in Butte, has Russ equipment with G-E refrigeration. The bar is 14 feet long, has Russ service insert, stein washer, and cocktail workboard. A G-E CM-5A compressor with conditioned air chilling unit supplies the refrigeration.

The pre-cooler in the basement is 5 ft. x 7 ft. The back bar was constructed locally from Russ blueprints.

Good reputation is built slowly —step by step—over a period of years. It results from wide-spread recognition of character and integrity as demonstrated by performance. It is a significant fact the public and trade speak well of Universal Cooler and regard its units as trustworthy and dependable.

UNIVERSAL COOLER CORPORATION
DETROIT, MICHIGAN BRANTFORD, ONTARIO

MANUFACTURERS OF A COMPLETE LINE OF HOUSEHOLD AND COMMERCIAL REFRIGERATION EQUIPMENT

STATISTICS

Refrigerator Tax Receipts Increase

(Concluded from Page 1, Column 1)

such refrigerator components are resold by such vendee otherwise than on or in connection with, or with the sale of, complete refrigerators or refrigerating or cooling apparatus, manufactured or produced by such vendee, then for the purposes of this section the vendee shall be considered the manufacturer or producer of the refrigerator components so resold."

Refrigeration and radio excise taxes paid by manufacturers in the various states in the fiscal years 1934 and 1933, respectively, are compared in the tabulation which is shown below.

* * *

Excise Taxes for Fiscal Years 1933 & 1934

State or Territory	Mechanical Refrigerators 5 Per Cent		Radio Sets, Phonograph Records, Etc. 5 Per Cent	
	1934	1933	1934	1933
Alabama	403.55	168.77	.....	.....
California	17,242.94	11,795.99	40,580.11	39,557.19
Colorado	.....	.....	6.60	.....
Connecticut	4,120.69	233.77	12,888.13	16,424.52
Florida	.....	.....	26.89	.....
Illinois	411,597.74	202,442.61	605,594.82	396,907.66
Indiana	724,460.99	256,721.57	133,983.06	144,765.63
Iowa	2,804.77	1,518.96	5,562.87	900.25
Kansas	41.18	271.89	29.45	41.73
Kentucky	.....	.....	87,415.49	48,033.27
Maryland	187.38	15.10	90.00	209 81
Massachusetts	863.14	13,527.76	246,942.93	130,192.01
Michigan	1,504,429.28	599,732.03	107,986.96	95,049.31
Minnesota	70,331.84	18,803.06	1,319.38	1,627.40
Missouri	996.95	272.75	265.82	587.17
Montana	.....	.....	.....	.23
Nebraska	.....	.....	36.40	21.44
New Hampshire	1,850.53	1,205.62	2.96	.....
New Jersey	12,830.52	2,454.12	830,132.66	620,726.71
New York	38,356.87	23,592.45	260,750.65	232,166.97
North Carolina	.....	.....	169.79	10.22
Ohio	2,225,610.90	831,610.80	150,193.55	112,195.85
Oregon	.....	.....	.....	2.25
Pennsylvania	500,340.79	141,375.55	653,553.28	355,658.60
Rhode Island	385.38	370.20	12,474.34	6,932.58
Tennessee	4,141.19	2,102.02	4.45	.....
Texas	.....	.....	78.91	11.45
Virginia	.....	.....	22.44	230.86
Washington	351.24	319.92	652.33	2,474.52
Wisconsin	4,565.07	3,329.07	5,099.37	1,431.53
District of Columbia	.....	.....	265.57	206.96
Hawaii	.....	4.63	648.17	604.23
Totals	**$5,525,912.94**	**$2,111,868.76**	**$3,156,777.38**	**$2,206,763.39**

Exports of Electric Refrigerators

July, 1934, Shipments Reported by the Bureau of Foreign and Domestic Commerce, Washington, D. C.

	Electric Household Refrigerators		Electric Commercial Refrigerators Up to 1 Ton		Parts for Electric Refrigerators
	Number	Value	Number	Value	Value
Austria	38	$ 1,623	...	$ ...	$ 677
Belgium	84	8,643	44	4,541	6,631
Bulgaria	3	297	...	...	...
Czechoslovakia	23	1,577	...	...	6,275
Denmark	2	238	8	830	1,215
Finland	14	1,073	3	239	563
France	1,170	86,659	33	3,852	45,543
Germany	13	1,062	2	346	6,609
Gibraltar	3	320	...	...	22
Greece	38	3,041	...	...	194
Irish Free State	28	3,351	56	5,984	578
Italy	222	19,159	43	3,825	10,961
Malta, Gozo, and Cyprus	1	137	...	...	...
Netherlands	253	24,295	71	4,788	14,096
Norway	45	4,026	16	2,319	2,044
Poland and Danzig	1	142	2	290	...
Portugal	7	771	...	...	1,155
Rumania	...	...	...	...	727
Soviet Russia in Europe	2	263	...	...	...
Spain	205	16,553	30	2,727	10,899
Sweden	184	14,691	25	3,073	8,753
Switzerland	22	2,452	26	1,610	10,207
United Kingdom	696	63,845	283	14,431	43,630
Yugoslavia	36	1,556	...	...	...
Canada	399	15,946	152	13,103	44,258
British Honduras	1	45	...	...	35
Costa Rica	2	119	...	...	1
Guatemala	1	175	...	...	26
Honduras	3	374	...	...	847
Nicaragua	3	358	...	...	55
Panama	55	6,419	7	2,297	1,453
Salvador	2	260	...	...	...
Mexico	184	15,634	1	173	8,694
Newfoundland and Labrador	1	91	...	...	...
Bermudas	26	2,640	5	810	284
Barbados	2	122	...	...	...
Jamaica	15	1,877	...	...	79
Trinidad and Tobago	23	1,840	...	...	73
Other British West Indies	7	528	...	...	82
Cuba	77	8,842	35	2,169	8,688
Dominican Republic	20	2,214	1	50	...
Netherland West Indies	30	2,635	2	206	92
French West Indies	3	180	...	...	10
Haiti, Republic of	3	189	...	...	15
Virgin Islands of U. S.	7	1,104	1	200	215
Argentina	52	2,070	22	2,384	9,518
Brazil	452	44,792	31	2,185	12,725
Chile	6	651	...	...	420
Colombia	29	3,644	...	...	401
Ecuador	14	1,187	...	...	25
British Guiana	3	343	...	...	...
Surinam	4	545	...	...	50
Peru	10	870	...	...	33
Uruguay	5	505	23	1,747	982
Venezuela	54	3,999	1	184	155
Aden	...	...	...	...	14
British India	318	30,019	44	6,281	6,076
British Malaya	114	12,264	15	1,967	214
Ceylon	35	2,395	...	...	221
China	62	4,933	...	...	14,555
Netherland East Indies	374	43,029	6	1,204	1,227
French Indo-China	16	1,241	...	...	...
Hong Kong	36	3,478	...	...	64
Japan	9	1,403	31	5,848	8,152
Palestine	108	9,225	28	4,317	3,181
Persia	82	6,829	14	1,047	280
Philippine Islands	27	3,267	...	...	291
Siam	5	942	...	...	54
Syria	13	1,123	...	...	7
Turkey	30	3,080	10	2,378	1,080
Other Asia	4	1,122	...	...	...
Australia	116	6,500	...	...	8,420
French Oceania	5	510	...	...	...
New Zealand	123	9,339	8	804	789
Belgian Congo	2	246	1	151	659
British East Africa	19	1,500	...	...	174
Union of South Africa	1,721	162,774	34	4,315	9,373
Other British South Africa	3	270	...	...	...
Gold Coast	8	594	...	...	438
Nigeria	14	1,542	...	...	67
Other British West Africa	...	...	...	...	20
Egypt	35	3,398	6	1,278	462
Algeria and Tunisia	271	23,677	44	4,732	4,974
Other French Africa	24	2,209	...	...	158
Italian Africa	8	652	...	...	39
Morocco	167	12,185	25	3,034	2,937
Mozambique	6	538	...	...	63
Canary Islands	26	2,696	...	...	113
Other Spanish Africa	13	1,083	1	215	50
Total	**8,377**	**$730,035**	**1,190**	**$111,934**	**$324,147**
Shipments to Hawaii	295	28,592	9	3,630	3,961
Puerto Rico	83	9,280	5	1,320	1,924

Gov't Issues Market Data on 12 Cities

WASHINGTON, D. C.—Data covering 12 more of the 63 cities included in the Real Property Inventory, nation-wide government housing condition survey, has been released.

Information covering the following cities has been given in previous issues of the NEWS: Casper, Wyo.; Boise, Ida.; Columbia, S. C.; Greensboro, N. C.; Butte, Mont.; Little Rock, Ark.; Nashua, N. H.; Hagerstown, Md.; Burlington, Vt.; Reno, Nev.; Paducah, Ky.; Wichita Falls, Tex.; Sioux Falls, S. D.; Austin, Tex.; Asheville, N. C.; Pueblo, Colo.; Frederick, Md.; Oklahoma City, Okla.; Albuquerque, N. M.; Phoenix, Ariz.; Baton Rouge, La.; Decatur, Ill.; Shreveport, La.; Fargo, N. D.; Charleston, S. C.; Springfield, Mo.; Zanesville, Ohio; Jackson, Miss.; Lincoln, Neb.; Santa Fe, N. M.; Portland, Me.; Topeka, Kan.; Williamsport, Pa.; Richmond, Va.; Kenosha, Wis.; and Knoxville, Tenn.

REAL PROPERTY SURVEY—12 CITIES

	Racine, Wis.	Dallas, Tex.	Trenton, N. J.	Lansing, Mich.	St. Joseph, Mo.	Sacramento, Calif.	San Diego, Calif.	Erie, Pa.	Binghamton, N. Y.	Des Moines, Iowa	Wichita, Kan.	Waterbury, Conn.
TYPE OF DWELLING (No. of Structures)												
Single family	11,515	56,756	15,571	16,484	14,317	24,468	48,462	18,182	14,708	34,664	25,355	8,899
2 family	3,047	6,981	7,322	969	1,632	1,840	1,843	5,222	4,741	950	1,239	2,895
3 family	42	245	152	61	12	68	60	39	499	47	15	2,695
4 family	110	1,084	56	105	135	633	453	194	270	196	273	145
Row house	11	31	1,494	14	9	21	126	107	18	22	61	11
Apartment	70	517	129	97	110	360	622	97	420	349	311	674
Other dwelling	770	1,199	1,833	414	471	902	999	1,353	1,101	1,113	475	741
Total structures	15,565	66,813	26,557	18,144	16,686	28,292	52,565	25,194	21,757	37,341	27,729	16,060
TYPE OF DWELLING (No. of Dwelling Units)												
Single family	11,515	56,756	15,571	16,484	14,317	24,468	48,462	18,182	14,708	34,664	25,355	8,899
2 family	6,094	13,962	14,644	1,938	3,364	3,680	3,686	10,444	9,482	1,900	2,478	5,790
3 family	126	735	456	1,183	36	204	180	117	1,497	141	45	8,085
4 family	440	4,336	224	420	540	2,532	1,812	776	1,080	784	1,092	580
Row house	41	137	7,847	97	33	107	628	659	103	91	287	98
Apartment	687	5,503	1,151	905	1,083	3,588	6,800	820	3,121	4,032	3,432	4,963
Other dwelling	1,350	2,199	2,909	788	659	1,926	2,127	2,181	2,418	3,246	1,367	1,889
Total dwelling units	20,253	83,628	42,802	20,815	19,932	36,505	63,695	33,179	32,409	44,858	34,056	30,304
AGE OF STRUCTURES												
0— 4 years	1,158	5,999	1,278	845	418	3,104	5,257	1,644	1,354	1,759	2,915	1,026
5— 9 years	2,789	17,353	5,275	3,500	1,132	7,822	17,281	3,550	3,366	5,037	5,900	2,354
10—14 years	1,524	13,859	2,912	3,190	935	4,472	9,050	2,624	3,707	6,158	4,618	1,544
15—19 years	1,604	10,241	2,604	3,196	938	2,960	6,610	3,826	2,921	6,280	3,371	1,913
20—24 years	1,344	6,990	2,322	1,954	1,908	2,710	6,498	2,321	1,747	4,009	3,307	1,106
25—29 years	995	3,940	1,296	1,543	2,057	1,668	2,601	1,615	1,236	3,123	2,322	1,118
30—34 years	1,151	4,808	2,219	1,223	3,192	1,725	2,496	1,959	1,793	3,628	2,436	1,526
35—39 years	928	1,235	1,129	715	1,359	875	855	1,241	1,046	1,848	811	995
40—49 years	1,595	1,650	2,678	1,148	2,475	1,595	1,403	2,742	2,370	3,236	1,676	1,828
50—74 years	2,029	540	3,596	762	2,152	1,153	356	2,864	1,812	2,141	311	1,631
75 years and over	437	47	1,210	59	111	51	27	754	339	80	8	983
Not reported	11	151	38	9	9	157	131	44	66	42	54	36
CONDITION OF STRUCTURE												
Good	5,734	24,512	10,271	5,544	4,992	10,407	25,019	11,566	12,069	13,051	8,970	8,017
Needs minor repairs	6,862	29,910	13,271	9,071	8,300	12,543	20,577	10,646	8,096	17,100	12,583	6,353
Needs structural repairs	2,764	10,564	2,652	3,273	2,956	4,310	6,088	2,755	1,470	6,426	5,533	1,513
Unfit for use	194	1,708	323	250	429	955	812	190	79	722	598	135
Not reported	11	119	40	6	9	77	69	37	43	42	45	42
MATERIALS OF CONSTRUCTION												
Wood	13,240	54,570	14,855	16,134	13,462	21,656	39,303	19,442	18,842	29,624	24,887	15,037
Brick	1,874	11,095	9,507	906	2,122	1,469	188	5,288	908	2,909	1,924	660
Stone	11	129	281	17	31	50	30	50	39	30	49	40
Concrete	64	63	362	97	19	81	360	62	353	162	215	50
Stucco	335	711	1,500	922	967	4,761	12,528	229	1,471	3,979	563	231
Other	30	209	42	63	80	254	128	118	131	611	52	26
Not reported	11	36	10	5	5	21	28	5	13	26	39	16
GARAGES AND AUTOMOBILES												
Structures with garages	9,657	46,885	11,509	13,654	9,581	21,326	41,314	14,955	12,734	25,856	21,257	7,513
Without garages	5,882	19,789	15,024	4,482	7,098	6,752	11,130	10,182	8,975	11,443	6,420	8,511
Not reported	26	139	24	8	7	214	121	57	48	42	52	36
Car capacity	15,465	69,789	18,815	19,150	12,211	29,611	53,765	25,364	21,852	33,037	29,949	14,217
No. of automobiles	10,262	50,663	18,877	14,049	9,223	23,725	41,245	16,325	17,809	26,405	22,319	11,186
DWELLING UNITS												
Total dwelling units	20,253	83,628	42,802	20,815	19,932	36,505	63,695	33,179	32,409	44,858	34,056	30,304
Rental units (includes vacants)	10,225	55,050	21,436	11,468	12,154	20,051	38,896	18,698	17,759	24,685	20,186	19,422
No. occupied by owner	10,028	28,578	21,366	9,347	7,778	16,454	24,799	14,481	14,650	20,173	13,870	10,882
Occupied dwelling units	18,821	77,745	40,362	19,956	18,422	32,866	57,972	29,621	31,135	42,496	31,587	28,222
Vacant dwelling units	1,432	5,883	2,440	859	1,510	3,639	5,723	3,558	1,274	2,362	2,469	2,082
Vacancy ratio	7.0%	7.0%	5.7%	4.1%	7.6%	9.97%	9.9%	10.7%	3.9%	5.3%	7.2%	6.9%
Extra families	955	7,084	2,792	1,497	1,629	1,798	3,164	1,717	1,341	2,781	2,091	1,438
RACE OF OCCUPANTS												
White persons	18,648	65,439	38,076	19,688	17,492	31,053	55,040	29,369	30,951	41,071	30,001	27,993
Persons of other races	115	12,236	2,228	257	923	1,589	2,834	233	151	1,400	1,570	211
Persons of race not reported	58	70	58	11	7	224	....	19	33	25	16	18
Total occupied	18,821	77,745	40,362	19,956	18,422	32,866	57,972	29,621	31,135	42,496	31,587	28,222
DURATION OF OCCUPANCY												
0— 5 months	2,612	22,701	4,891	4,418	3,686	7,153	17,242	3,186	4,777	9,233	8,412	3,743
6—11 months	1,410	10,330	2,736	2,044	1,962	3,129	6,737	4,005	2,752	4,581	3,590	2,086
1 year	1,813	9,012	3,325	2,198	1,939	3,451	5,919	3,103	3,573	4,503	3,475	3,162
2 years	1,297	4,716	2,590	1,202	1,184	2,184	3,585	1,927	2,289	2,873	2,050	2,198
3— 4 years	2,203	6,783	4,462	1,810	1,784	3,525	5,252	3,018	3,316	4,128	3,568	3,221
5— 9 years	3,624	11,509	9,246	3,170	2,690	6,320	10,247	5,068	5,521	6,306	4,839	5,484
10—19 years	3,525	9,719	9,275	3,793	2,959	4,502	6,831	5,602	6,293	7,713	4,181	5,317
20 years and over	2,297	2,793	3,808	1,315	2,211	2,298	2,075	3,705	2,584	3,130	1,412	3,003
Not reported	40	182	29	6	7	304	84	7	30	29	60	8
DURATION OF VACANCY												
0— 5 months	559	4,218	1,175	439	761	2,133	4,188	1,282	700	1,550	1,602	851
6—11 months	194	795	363	96	274	510	728	902	189	319	346	334
1 year	247	438	329	149	241	415	327	692	177	210	223	375
2 years and over	376	355	528	166	230	429	327	661	178	267	261	507
Not reported	56	77	45	9	4	152	153	21	30	16	37	15
MONTHLY RENTAL												
Under $10.00	1,466	8,213	674	1,639	2,007	1,165	2,339	577	195	2,545	4,498	532
$10.00 to 14.99	2,354	10,667	2,943	2,678	3,445	2,752	5,281	3,125	1,041	4,420	4,880	3,231
$15.00 to 19.99	2,510	9,046	3,900	2,657	2,222	3,759	8,421	4,861	2,982	4,023	3,483	4,914
$20.00 to 29.99	2,441	13,864	7,277	2,969	2,663	6,728	14,058	6,756	7,060	7,114	3,987	6,904
$30.00 to 49.99	977	9,732	4,860	1,217	1,445	4,490	6,498	2,730	5,502	4,970	2,432	3,153
$50.00 to 74.99	196	1,945	1,124	202	224	560	1,420	319	692	1,180	419	465
$75.00 and over	33	707	327	37	44	80	388	146	95	181	77	131
Rent free or not reported	248	876	322	69	104	517	491	184	192	252	410	92
NUMBER OF ROOMS												
1	51	2,203	126	98	251	1,176	903	94	112	1,625	802	74
2	375	6,685	615	642	1,156	3,197	5,590	418	463	3,022	3,202	507
3	1,225	14,178	1,444	1,102	2,605	4,433	10,746	998	1,718	3,963	4,043	2,155
4	2,489	19,253	3,733	1,869	4,554	7,831	13,462	3,041	3,427	6,168	6,040	6,429
5	6,521	20,194	5,685	5,172	5,770	11,788	17,823	8,746	8,244	13,974	9,752	10,302
6	4,850	10,748	17,121	5,890	3,013	4,946	8,885	10,318	9,214	7,802	5,518	6,322
7	2,325	4,837	5,931	3,334	1,256	1,641	3,280	4,670	4,391	4,246	2,224	2,161
8	1,385	2,593	4,223	1,567	803	765	1,484	2,741	2,940	2,496	1,434	1,135
9 and over	964	2,856	3,870	1,128	517	605	1,437	2,126	1,865	1,554	1,017	1,205
Not reported	68	81	54	13	7	123	35	27	40	8	24	14
EXTENT OF CROWDING												
Very spacious	6,317	19,000	....	7,985	5,763	10,894	22,865	11,797	12,410	13,623	9,927	7,960
Spacious	5,278	20,024	....	5,657	4,953	8,634	16,258	7,554	8,519	11,019	8,243	7,066
Adequate	5,049	20,822	....	4,676	4,656	8,726	13,149	6,694	6,983	11,355	8,508	7,779
Crowded	2,040	15,535	....	1,586	2,710	3,959	5,279	3,430	3,085	5,830	4,378	5,161
Overcrowded	60	1,807	....	34	268	313	236	95	73	502	392	208
Greatly overcrowded	19	478	....	5	55	88	63	9	17	136	110	18
Not reported	58	79	....	13	17	252	122	42	48	31	29	30
TYPE OF HEATING APPARATUS												
Hot air furnace	12,403	692	....	15,001	8,315	5,755	1,993	19,028	19,046	27,404	11,314	4,463
Steam or vapor	1,066	1,607	....	2,663	990	2,070	2,218	1,416	5,192	4,341	2,298	2,343
Hot water	2,374	397	....	406	460	232	167	1,272	887	2,116	704	6,036
Heating stove	4,276	80,608	....	2,699	9,525	25,841	48,742	11,090	7,196	10,854	19,618	17,347
Other	104	155	....	13	623	1,916	8,817	275	65	111	80	68
None	10	134	....	25	13	558	1,682	85	9	25	25	34
Not reported	20	35	....	8	6	133	76	13	14	7	17	13
FUEL USED												
Coal	19,248	953	....	20,253	16,765	2,528	590	27,618	31,118	41,636	14,667	19,206
Wood	105	17,719	....	16	327	19,345	22,442	420	389	141	2,619	953
Gas	32	64,448	....	45	1,591	12,424	29,058	1,280	208	811	15,830	59
Oil	758	77	....	346	1,100	1,126	2,138	239	629	2,142	658	2,000
Other	30	299	....	119	126	386	7,710	3,505	43	85	207	8,006
None	11	83	....	24	6	367	1,416	48	9	24	21	35
Not reported	69	49	....	12	17	329	341	69	13	19	54	45
RUNNING WATER												
Cold	4,601	19,687	....	4,666	8,050	7,258	9,850	4,673	3,778	7,538	3,791	8,982
Hot and cold	14,268	53,475	....	15,418	10,248	27,381	53,380	27,391	27,882	30,001	24,975	20,488
None	1,359	10,425	....	723	1,630	1,773	400	1,106	735	7,315	5,275	819
Not reported	25	41	....	8	4	93	65	9	14	4	15	15
LIGHTING												
Gas	18	52	....	9	33	45	25	84	18	37	16	54
Electricity	19,489	70,972	....	20,458	18,350	35,144	62,180	32,424	31,660	42,594	31,913	29,409
Other or none	700	12,507	....	330	1,540	1,126	1,380	638	692	2,219	2,093	804
Not reported	46	97	....	18	9	190	110	33	39	8	34	37
COOKING												
Gas	17,135	66,043	36,350	15,714	12,324	29,404	59,355	31,052	26,342	35,488	27,059	24,806
Electricity	228	298	36	1,055	251	1,406	435	32	329	233	213	181
Other or none	2,818	17,187	6,284	4,030	7,348	5,504	3,794	2,062	5,703	9,129	6,752	5,280
Not reported	72	100	132	16	9	191	111	33	35	8	32	37
PRIVATE INDOOR WATER CLOSETS												
None	2,178	18,840	6,430	1,235	4,695	5,739	3,919	1,712	1,326	12,057	7,649	1,878
1	16,659	60,188	34,351	17,612	14,600	28,673	54,478	30,121	29,932	30,634	24,735	27,391
2	1,245	3,266	1,342	1,817	488	1,700	4,053	1,070	922	1,759	1,388	709
3	130	958	343	135	94	160	1,125	144	118	252	164	173
4	....	210	139	....	34	43	....	69	48	92	60	70
5 and over	....	65	129	....	15	19	....	42	27	51	31	65
Not reported	41	101	68	16	6	171	120	21	36	13	29	18
TUBS AND/OR SHOWERS												
None	4,867	19,906	7,159	3,038	6,219	5,314	5,485	5,268	2,982	14,394	8,376	3,937
1	15,015	59,567	34,336	17,292	13,312	30,076	54,581	27,315	28,792	29,242	24,819	25,654
2	262	3,466	781	425	297	811	2,610	425	488	1,002	704	466
3 and over	56	571	453	44	99	128	864	143	114	207	119	223
Not reported	53	118	73	16	5	176	155	28	33	13	38	24
MISCELLANEOUS												
Mechanical refrigeration	2,917	13,894	6,298	2,987	3,833	6,408	10,337	3,052	4,417	7,780	7,495	3,977
Vegetable garden in 1933	6,973	11,325	6,180	5,360	3,982	6,236	3,924	8,041	9,039	14,160	11,437	4,946

G-E Electric Kitchen Now Installed in 100 Department Stores

CLEVELAND — More than 100 of the country's large department stores handling General Electric household appliances have installed complete G-E kitchens for promotion and demonstration purposes. Among those now equipped with kitchens are the following:

Kerr Dry Goods Co., Oklahoma City; F. & R. Lazarus Co., Columbus, Ohio; H. & S. Pogue Co., Cincinnati; Broadway Department Store, Los Angeles; Geo. Wyman Co., South Bend, Ind.; Albert Steiger Co., Springfield, Mass.; Strawbridge & Clothier, Philadelphia; J. L. Hudson Co., Detroit; Chas. Trankla & Co., Grand Rapids; Smith-Bridgman Co., Flint, Mich.

Wallace Co., Poughkeepsie, N. Y.; Adams Flanigan Co., Bronx, N. Y.; White House, El Paso; Shepard Store, Providence, R. I.; Fair Store, Chicago; Ivey's Department Store, Charlotte, N. C.; W. C. MunnCo., Houston; City of Paris, San Francisco; H. C. Capwell Co., Oakland; A. Harris Co., Dallas; Monnig Dry Goods Co., Ft. Worth; May Co., Cleveland.

Wm. Taylor Son & Co., Cleveland; M. O'Neil Co., Akron; Dey Bros., Syracuse; McCurdy & Co., Rochester; Fowler, Dick & Walker, Binghamton, N. Y. and Wilkes Barre, Pa.; Stix, Baer & Fuller, St. Louis; Wallace Co., Schenectady; John G. Myers Co., Albany; Albert Steiger Co., Hartford, Conn.; O. Falk Department Store, Tampa, Fla.; Brandeis Store, Omaha.

Golden Rule, St. Paul, Minn.; Dayton Co., Minneapolis; Denver Dry Goods Co., Denver; Loveman's, Inc., Chattanooga; Larkin Co., Buffalo; Gimbel's, New York City and Philadelphia; Abraham & Straus, Brooklyn; James McCreery &Co., New York City; B. Gertz, Jamaica, N. Y.; A. Polsky & Co., Akron; Hutzler's, Baltimore; Joseph Horne Co., Pittsburgh.

S. H. George & Sons, Knoxville, Tenn.; Wolff & Marx, San Antonio, Tex.; Tiedtke's, Toledo, Ohio; Goldblatt Bros., Chicago; Higbee Co., Cleveland; Hager & Bro., Inc., Lancaster, Pa.; Hess Brothers, Allentown, Pa.; Wm. H. Frear Co. ,Inc., Troy, N. Y.; Hutzler & Co., Inc., Richmond, Va.; Krauss Co., Ltd., New Orleans; Barker Bros., Los Angeles.

Bullock's, Los Angeles; L. M. Blumstein, New York City; Wilson's Department Store, Brooklyn; Smulekoff's, Cedar Rapids, Iowa; Fries & Schuele, Cleveland; A. Polsky Co., Akron, Ohio; Meier & Frank, Portland, Ore.; Meyer Bros., Paterson, N. J.; L. S. Ayres & Co., Indianapolis; Jones Store, Kansas City, Mo.; McCreery & Co., Pittsburgh, Pa.; S. H. George & Sons, Knoxville.

Lowenstein's Memphis; Jordan Marsh Co., Boston; A. P. May, Inc., Coalinga, Calif.; Deihl's Department Store, Bakersfield, Calif.; Rudolph Wurlitzer Co., New York.

Owen D. Young Strikes At Regimentation

SYRACUSE, N. Y.—The farmer will never welcome government interference with his business, may tolerate it if accompanied by a government subsidy, but will never be happy under it, declared Owen D. Young, farmer of Van Hornesville, N. Y., and chairman of the board of the General Electric Co., in his dedication address at the opening of the Wing Coliseum, newly constructed livestock amphitheater, at the State Fair here.

"If there is one thing sacred to the farmer, it is the freedom of action or inaction which no other occupation knows," Mr. Young said. "He accepts no man as his boss, neither an employer nor an agricultural leader. He resents the discipline of the factory whistle, the notion of daylight saving, specific hours of work, in fact all regimentation by anybody for any purpose.

"They indeed are free men, honoring a modest and useful man," continued Mr. Young. "They are so free and so highly individualistic that it is difficult to unify them in an organization for their own protection even in these days when organized minorities seem to be all powerful."

12 New Dealers Named By Rex Cole, Inc.

NEW YORK CITY—William J. Clark of the metropolitan dealer division, wholesale department, Rex Cole, Inc., of this city, recently announced appointment of 12 new dealers for General Electric refrigerators as follows:

Carroll Radio Corp., Electime Corp., P. Pravder, Swire Bros., George Weiderman Electric Co., Wilson's Dept. Store, all of Brooklyn; Queens Furniture Shop, Queens Village, N. Y.; W. F. Batterham Co., Erb Electrical Supply Co., Samuel Frost, Rudolph Wurlitzer Co., Morgan & Dornich, all of New York City.

'Safety Zone' Theme Used by Westinghouse in Sixth Part of '34 Advertising Program

MANSFIELD—To stimulate fall refrigeration sales, Westinghouse Electric & Mfg. Co. has initiated a "Safety Zone" plan as the sixth of its national seven-point advertising plan for the year.

"Safety Zone," which is the theme of the entire activity, is designated by Westinghouse as the band of temperature between 32° and 50° F.—the best temperature for the adequate preservation of foods. All advertising points out why persons should be conscious of this zone, and the literature and salesman's contacts back up these arguments.

Particularly emphasized in the campaign is the fact that perishable food is refrigerated from its source through the various distribution channels to the consumer, and that it becomes the responsibility of the housewife properly to preserve the food in her home until it is used.

Spearhead of the "Safety Zone" campaign was an owner-testimonial advertisement in the Oct. 6 issue of the *Saturday Evening Post*, and another will appear in the November issue of *Good Housekeeping*. They feature a Minneapolis user who says, "Foods Keep Right With Westinghouse Refrigeration."

This testimonial is considered by Westinghouse as strategic from a geographical standpoint, as the temperature in Minneapolis strikes a lower average for the year than in the majority of points in the United States. The innuendo is made that surely if Minneapolis needs electric refrigeration in the winter, it is desirable and necessary in other sections of the country.

Attacks will be made in a series of newspaper advertisements for local use with such challenges as, "You Buy Fresh Food, but Do You Keep it Fresh?", and "Safeguard Your Family's Health with Safety Zone Refrigeration," and "Healthy Youngsters Need Fresh Food; Protect the Food You Serve Them."

A direct-mail series has been labelled the "Hot Shot" campaign, and consists of six postcards, each in a different color and containing one single statement. These are to be sent out daily as a build-up until the series is exhausted. Then the salesman calls on the same day the last card is delivered.

New full line folders, new window displays, slide films, and other pieces of sales promotion have been created to back up the "Safety Zone" campaign. A complete schooling for dealers and their salesmen featuring sales problems encountered in cold-weather selling is written up in four issues of Quota Clincher Weekly, a service magazine.

All information concerning the drive has been presented in a portfolio labelled "Turn on the Heat."

New Grunow Radio Dealers Named for Central N.Y.

NEWBURGH, N. Y.—Shapiro Sporting Goods Co., Grunow distributor for central New York, has appointed 10 dealers in the key cities in its territory as follows:

Kingston Modern Home Supply Co., Rose & Gorman of Kingston, N. Y.; Mitchell Furniture Co., Wallace Co. of Poughkeepsie, N. Y.; Roosa Furniture Co. of Beacon and Newburgh, N. Y.; Burger Furniture Co., Rouss Radio & Appliance Co. of Newburgh, N. Y.; Loy Carter, Middletown, N. Y.; Levin Furniture Co., Port Jervis, N. Y.; Otto Scharf, Peekskill, N. Y.

Coal, Ice Dealers Fight TVA Plans Alabama

BIRMINGHAM—Now under consideration by the public service commission of this state is a protest made by several ice and coal dealers against the Alabama Power Co.'s petition for permission to transfer power distribution systems in 14 Alabama towns to the Tennessee Valley Authority. Under the plan, TVA would pay $1,000,000 for the properties. The ice and coal merchants say governmental competition will ruin their business.

Atwater Kent Reinstates Promotion Department

PHILADELPHIA — Atwater Kent Mfg. Co., radio manufacturer said to be planning to enter the electric refrigeration field, last week announced the reinstatement of its sales promotion department.

George Lyons has been named to head the department. He was assistant manager of the former Atwater Kent sales promotion department, before it was eliminated from the organization's setup. More recently he has been divisional salesmanager.

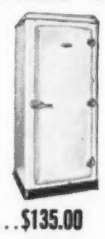
There's a Sales Reason in every SHELVADOR Feature.

There's a SALES CLINCHER in the unbelievably low price of the new

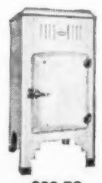
CROSLEY CHEST SHELVADOR

APPROVED BY T.V.A.

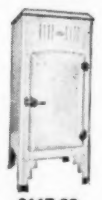
Crosley Shelvador and Tri-Shelvador models represent the greatest value in the history of electric refrigeration. Incorporating the famous Crosley Shelvador and other features, they are the outstanding successes of the 1934 season. Illustrated are household electric refrigerators for every purse and purpose.



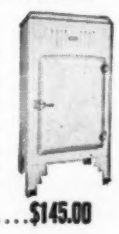
4.3 cu. ft. NET capacity, 9.15 sq. ft. shelf area, 2 ice trays—42 cubes—one double depth tray. Dimensions: 56⅝" high, 23¾" wide, 21⅛" deep. Model EA-43 .....$135.00



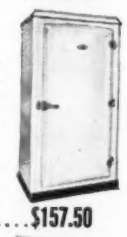
3.5 cu. ft. NET capacity, 7.5 sq. ft. shelf area, 2 ice trays — 42 cubes. Dimensions: 48¹¹⁄₁₆" high, 23¾" wide, 24⅞" deep. Model EA-35.....$99.50



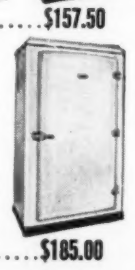
4.3 cu. ft. NET capacity, 9.15 sq. ft. shelf area, 2 ice trays—42 cubes—one double depth tray. Dimensions: 54¹¹⁄₁₆" high, 23¾" wide, 24⅞" deep. Model EA-43 .....$117.00



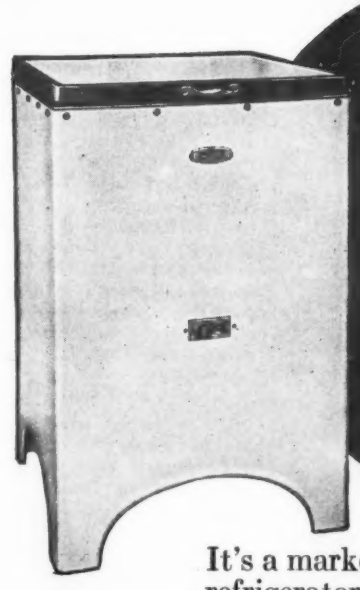
5.5 cu. ft. NET capacity, 11.6 sq. ft. shelf area, 3 ice trays—63 cubes—one double depth tray. Dimensions: 55¼" high, 29" wide, 25¹³⁄₁₆" deep. Model EA-55 .....$145.00



5.5 cu. ft. NET capacity, 11.6 sq. ft. shelf area, 3 ice trays—33 cubes—one double depth tray. Dimensions: 57¼" high, 29" wide, 25¹³⁄₁₆" deep. Model EA-55 .....$157.50



7 cu. ft. NET capacity, 14.9 sq. ft. shelf area, 4 ice trays — 84 cubes — one double depth tray. Dimensions: 58¾" high, 32¾" wide, 26¾" deep. Model E-70.....$185.00



$72.50 DELIVERED — INSTALLED ONE YEAR FREE SERVICE

THOSE who hitherto could not afford an electric refrigerator, those who need a second electric refrigerator or a bottle cooler—small delicatessens, roadside stands, sandwich shops, apartments, hospitals, institutions . . . *all represent a big new market for the Crosley Chest Shelvador—a market that you can command by reason of much lower price, much bigger value!*

It's a market that you cannot reach with any other type of electric refrigerator—it's a market that fits the quality and the value of the Crosley Chest Shelvador! The marvelous sales-doubling Shelvador feature, *here it is!* The famous Crosley cooling unit that outlasts and outperforms, *here it is!* And it's not a "small" electric refrigerator. It's big enough for the preservation of the amount of food needed in the average home. The porcelain top makes a handy table. Dimensions: 36" high, 23⅝" wide, 20⅝" deep. The Crosley Shelvador is a shouting affirmation of the truth, learned by thousands of dealers—you cannot afford *not* to handle Crosley! See your Crosley distributor — now!

Western prices slightly higher.

THE CROSLEY RADIO CORPORATION

(*Pioneer Manufacturers of Radio Receiving Sets*)

Home of "*the Nation's Station*"—WLW—500,000 watts—most powerful in the world—70 on your dia

POWEL CROSLEY, Jr., *President* CINCINNATI

ALL PRICES INCLUDE DELIVERY . . . INSTALLATION . . . ONE YEAR FREE SERVICE

SERVICE

How To Service Holmes Machines Which Used Ethyl Chloride

First Installment on Servicing the Holmes Refrigerator Giving Details of Construction & Operation

HOLMES household electric refrigerators, manufactured several years ago by Holmes Products, Inc., of New York City, employed a two-stage rotary compressor using ethyl chloride as a refrigerant. The manufacturer, Holmes Products, succeeded the Domestic Electric Refrigerator Corp., whose "Allison" electric refrigerator was described for service men in the May 30 and June 6 issues of ELECTRIC REFRIGERATION NEWS.

The following article describes the Holmes machine and its accessory parts in some detail. Next week's issue will explain the recommended methods of performing various service operations on the unit, and the final instalment on the Holmes machine will diagnose its common service troubles, giving remedies.

The NEWS is indebted to J. W. Wayne of Wayne's Vacuum Repair Shop of Shawnee, Okla., for the information presented herewith.

Compressor

The Holmes compressor is mounted in a horizontal position, with the condenser, condenser fan assembly, compressor, and motor arranged in a straight line, see Fig. 1.

It has two stages of compression. One is known as the low pressure rotor, and the other as the high pressure rotor. Rotors are of the blade type, each rotor being equipped with four blades.

The contact between the rotor blades and the cylinder wall is made by the use of the wiper blades which fit into the rotor blades in such a manner as to establish and maintain contact with the cylinder wall. These wiper blades fit freely into the rotor blades enabling them to establish a rocker action as the rotor travels around the cylinder.

The compressor draws gas from the chilling unit, compresses the gas, and forces it into the condenser with an eccentric assembly of the rotors fixed in relation to the cylinder walls. The close contact of the blade to the cylinder wall is maintained by the centrifugal force created by the rapid movement of the rotor.

Spaced pins of special design are installed through the center of the shaft with both ends of the pins back of opposing rotor blades.

Due to the eccentric assembly of the rotor in relation to the cylinder, these pins move back and forth starting the blades in action. The centrifugal force, as explained above, keeps the wiper blades in direct contact with the cylinder wall.

In operation, the large, or low-pressure rotor, draws the gas from the chilling unit through the bottom of center drive plate to the suction port of the low pressure cylinder. At this point there is considerable space between the rotor and cylinder wall.

As the rotor revolves, this space becomes smaller with the result that the gas is compressed. When the rotor has nearly completed its revolution, a discharge port is uncovered in the cylinder.

The gas which has been compressed by the low pressure rotor is forced through this port into a chamber between the high pressure rotor and its cylinder. This rotor is on the same shaft and travels at the same speed as the low pressure rotor.

As this high pressure rotor revolves, the space between it and the high pressure cylinder is restricted and the pressure increased. When it has practically completed its revolution, a discharge port is uncovered in the high pressure cylinder and the gas is forced through this port and into an end plate which contains a muffler.

It is then forced through a discharge tube into the compressor housing or dome. The low pressure rotor draws the gas from the chilling unit at from 12 to 18 in. of vacuum. The gas is compressed by the low and high pressure rotors to a point where it is discharged into the compressor dome at a pressure from 8 to 30 lbs.

There is a certain amount of oil traveling through these rotors with the compressed gas. This serves to seal the wiper blades against leakage of the compressed gas back into the low pressure area. As the gas and oil is forced through the discharge tube into the compressor housing, it is thrown up against a baffle plate.

The gas, being lighter than the oil, rises to the top and the oil drops back to the bottom of the compressor housing. From the top of the compressor housing, the gas is forced into the condenser coil.

At the factory, two and one-half pints of oil were placed in the housing. All parts of the compressor run in this oil bath. The pressure of the compressed gas, which is always present in this housing, forces this oil to bearings, shafts, etc.

There is a small opening through the pump shaft which permits the oil to be forced through to the motor, lubricating the internal parts of the compressor, its shaft bearings, and the bearings of the motor. It then travels to the end of the motor shaft and flows to the bottom of the motor housing.

From the bottom of the motor housing, oil is returned to the compressor through a hole which is drilled in the center drive plate. This hole connects the motor housing to the suction port in the center drive plate through which the gas from the chilling unit is drawn to the compressor.

The suction of the compressor, when in operation, creates the same vacuum condition in the motor housing, through this oil hole, as is created in the chilling unit. The suction of the compressor draws the oil from the bottom of this motor housing through the suction port of the compressor and expels it through the discharge tube into the compressor dome.

This gives lubrication to the inner walls of the compressor cylinders, rotor blades and wipers. This oil system thus constitutes forced feed lubrication.

The compressor body and cylinder wall is constructed of cast iron. The compressor and motor shaft are of chrome Vanadium steel.

Spacer pins, rotor blades and wiper blades are of high carbon steel, while, low pressure and high pressure rotors are constructed of high carbon steel.

The low pressure rotor may be identified as the larger rotor, and is located nearest the suction intake of compressor.

The high pressure rotor is the smaller rotor. This construction of rotary compressor is often termed "compound" or "two stage rotary pump or compressor."

Motor

The machine used an electric motor manufactured by Westinghouse especially for the Holmes machine. It is of the split phase type, ⅛ hp., 110 volt, 60 cycle, a.c. The motor is sealed in a housing with the compressor.

It is not necessary for the owner to lubricate the bearings of this motor as lubrication is accomplished by means of a pressure oil feed through the shaft of the compressor and motor, as previously explained.

The motor operates at a speed of 1725 r.p.m. and is directly connected to the compressor.

Condenser

The condenser is of laminated copper construction. A copper tube connects the condenser to the charging valve which is mounted on the compressor dome. The compressed gas is pumped through this tube and into the top of the condenser.

As the gas travels to the bottom, the heat is extracted by forcing a draft of air over the condenser. Attached to the bottom of the condenser is a float valve housing.

With the float located in this position, the liquid drains into it, leaving the entire condenser available for transfer of heat from the compressed gas. Lint and dust which accumulates on the fins of the condenser obstruct air circulation and should be removed by means of a cloth or a vacuum cleaner every three months.

Float Valve

In order to understand the action of this float valve, it is necessary to understand that the liquid in the condenser is under pressure. The liquid in the chilling unit is under a partial vacuum. The float valve is the point of division between the pressure and vacuum of the system.

One end of this float housing is made of a forged bronze casting, see Fig. 2. A small opening 1/16-in. in diameter is made in this head casting. Attached to this opening is a ⅛-in. copper tube leading to the chilling unit in the refrigerator.

The inside of this opening is made in the form of a needle seat. Fitted into the seat is a nickel silver needle. Operating this needle is a copper float ball. The float ball is connected to the needle by means of a lever arm and a universal joint. This joint eliminates needle sticking, and also provides a positive action of the needle no matter what the position of the float ball.

The float ball is built with a specially designed steel liner. This permits the lifting of the float ball with a magnet from the outside. The steel liner, being enclosed in the copper ball, is not subject to corrosion or electrolytic action through contact with the various substances inside the refrigerating system.

In operation, the float ball lies in the float housing. It does not touch the bottom of the housing. The weight of the ball holds the needle tightly against its seat. This closes the passage between the pressure and the vacuum sides of the system.

As the compressed ethyl chloride condenses, the liquid accumulates in the float housing, causing the ball floating on the top of the liquid to rise. The rising of the ball lifts the needle from its seat and permits a part of the liquid to flow through the ⅛-in. tube in connection to the chilling unit.

The location of the needle seat and the weight of the float ball are so arranged that the needle will not be lifted until sufficient liquid has been accumulated to cover the opening completely.

As the liquid flows from the housing, the float ball drops and the needle is forced into its seat, stopping the flow before the liquid is lowered sufficiently to uncover the seat. This permits only liquid to enter the chilling unit. If the liquid were permitted to drop below the needle seat, the high pressure gas would flow freely into the chilling unit, interrupting refrigeration.

The float mechanism is designed to admit small quantities of liquid to the chilling unit almost continuously when machine is operating.

The float housing is made of heavy cast brass. The end, containing the float mechanism, is made of heavy bronze forging. The float mechanism is located at the bottom of the condenser.

Condenser Fan Assembly

Under the black fibre shroud between the motor housing and the condenser is the fan assembly. This consists of a 1/35-hp. motor and a 6½-in fan. This motor is wired in parallel with the compressor motor and operates at 1725 r.p.m.

The fan motor is placed in a cradle which is attached to the compressor motor housing. It is held in place by a clamp and set screw. The motor is lubricated by means of a grease cup. There is sufficient grease in this cup to lubricate the motor for six months.

Charging Valve

The charging valve (Fig. 3) is located in the compressor dome. Its purpose is to permit charging of the system, taking pressure gauge readings. The valve is connected to the condenser by means of ⅜-in. copper tubing. The valve stem is covered with a sealing cap and a lead gasket to prevent leakage.

This valve does not require the seating of a valve stem in order to close a port. The valve is really a three-way cock. One-quarter turn will move the stem sufficiently to close one port and open another.

It is not necessary that the valve be absolutely gas tight. The sealing cap is depended on to prevent leakage. Therefore, when this cap is removed, you will note a slight leakage of gas around the valve stem.

Check Valve

The compressor housing contains a quantity of oil under the same pressure as the condenser. When the machine stops, it is essential that this oil be kept in its proper place in the compressor unit. The chilling unit and the copper tubing suction line are under a vacuum at the time the machine is stopped.

In order to keep the pressure from forcing oil back through the pump and into the chilling unit, a check (Fig. 4) valve is placed in the suction line just ahead of the suction port to the compressor.

The design of this valve is such that a gas or liquid can pass through it in one direction only. This direction of flow is from the chilling unit to the compressor. As soon as the machine stops, the pressure starts to leak back through the compressor cylinder.

The instant this pressure reaches the check valve, it forces the valve to seat; thus, checking the flow of oil and gas from the compressor to the chilling unit. The valve is closed with a soldered seal.

"Sentinel" Breaker

The breaker (Fig. 5) used on the Holmes machine was manufactured by Westinghouse. The purpose of the Sentinel Breaker is to open the circuit in case of overloading of the motor. A load of more than eight amperes for any length of time will cause the bi-metal in the breaker to expand. The expansion of the metal opens a make and break switch. It is connected in series with the compressor motor.

Once this switch has been opened, it will not close automatically. It is necessary to operate the Sentinel Breaker by hand. First, move the lever all the way to the "off" position. This engages the make and break switch. Then move the lever all the way to the "on" position, starting the machine.

The breaker is located in the upper right hand corner of the machine compartment and to the right of the machine, as you face the box.

Thermostat

The thermostat was manufactured by the Automatic Reclosing Circuit Breaker Co. It consists of a small bellows in which a solution of alcohol and water is hermetically sealed. The bellows is inserted in a brass tube sufficiently large to allow it to expand or contract freely.

The upper end is securely fastened to a switch body of a special make and break type. The thermostat tube is securely fastened to the surface

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Holmes Compressor

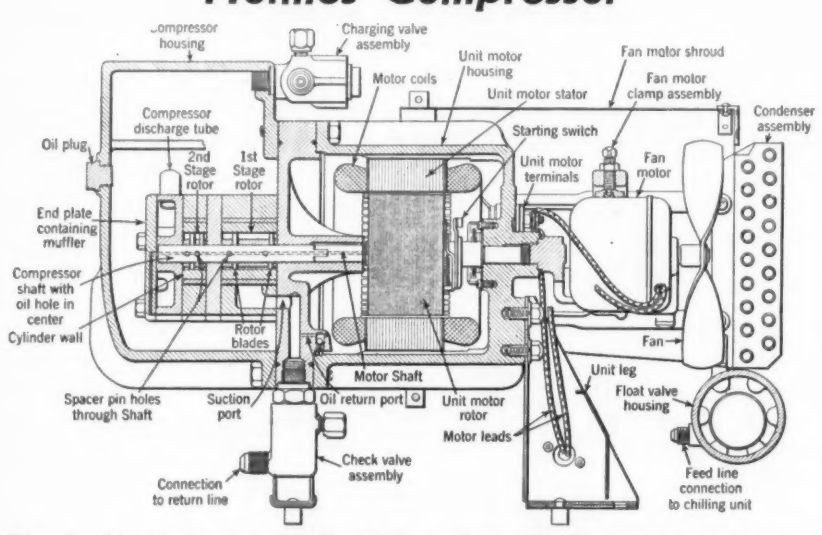
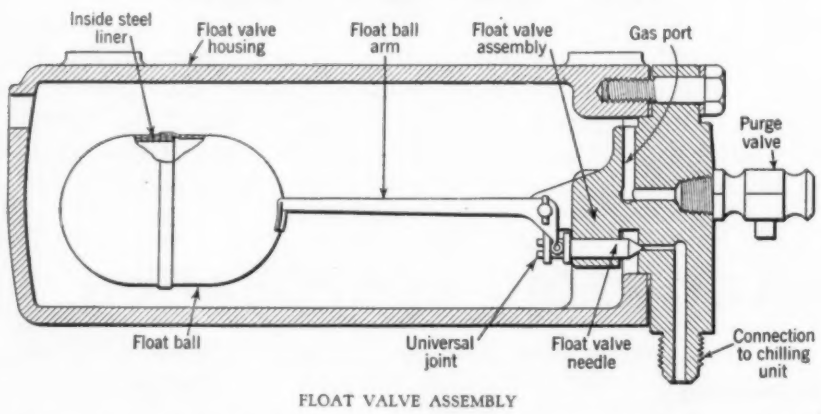


Fig. 1. Sectional view of the Holmes "two-stage" rotary compressor.

Holmes High Side Float



FLOAT VALVE ASSEMBLY

Fig. 2. Holmes high side float. The float ball has a steel liner, permitting service men to lift it off the seat by using a magnet.

Check Valve

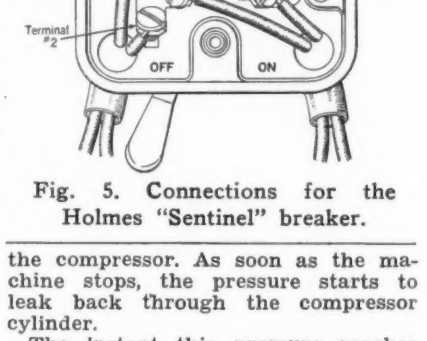


Fig. 4. Check valve in the suction line to prevent oil from backing up to the chilling unit.

Circuit Breaker

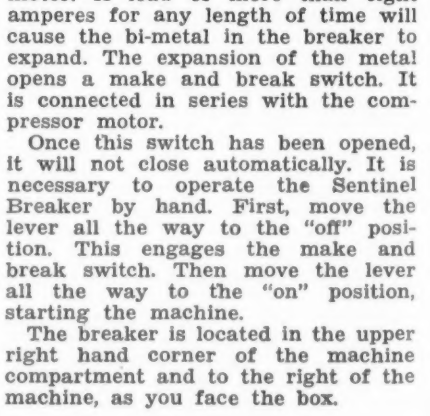


Fig. 5. Connections for the Holmes "Sentinel" breaker.

Charging Valve

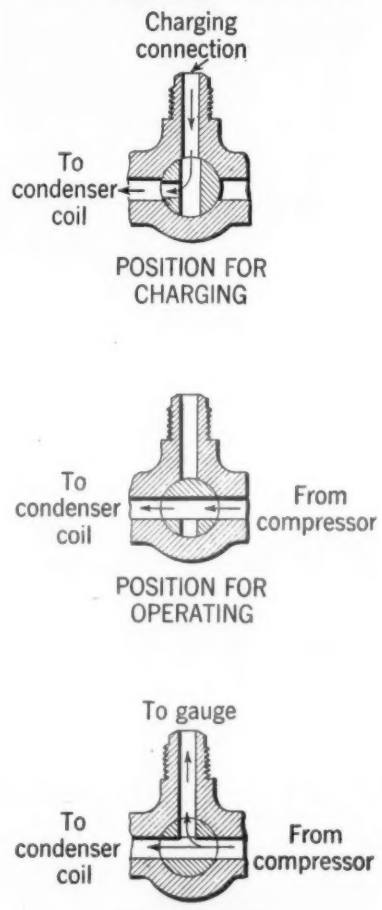


Fig. 3. Mounted on the compressor dome is this charging valve assembly which has positions for charging, operating, and for taking pressure readings.

Extra Dry ESOTOO
LIQUID SULPHUR DIOXIDE
V-METH-L
METHYL CHLORIDE
VIRGINIA SMELTING Company
WEST NORFOLK, VA.
131 State St., Boston, and
76 Beaver St., New York

Holmes Service Instructions
(Continued)

(*Concluded from Page 14, Column 5*)

of the chilling unit by means of a metal clamp.

Chilling Unit

The chilling unit (Fig. 6) used in the Holmes machine is of shell type construction, using direct expansion. It is constructed of two shells of heavy iron, cast in one piece.

The chilling unit is provided with four ice trays. Each tray makes 21 ice cubes.

In the cycle of refrigeration, the liquid ethyl chloride enters the bottom of the chilling unit through the ⅛-in. copper tube connection.

The oil return assembly is located on top of the chilling unit. The purpose of this tube is to return to the compressor any oil which may have passed into the chilling unit from the compressor and condenser.

On the inside of the back cover of chilling unit, a "U" shaped tube is installed. The bend of this "U" tube extends down into the liquid ethyl chloride. A strainer is installed on the open end of the "U" tube which is above the liquid level of the chilling unit.

A small hole is drilled in the bend of the "U" through which a small quantity of liquid ethyl chloride and oil is drawn into the oil return assembly with the expanded gas.

The outlet to the chilling unit is connected to the top coil of the oil return assembly. The bottom coil of the oil return assembly is connected to the suction line leading to the compressor.

With this construction, the oil in the chilling unit is constantly being drawn through this "U" connection and back to the machine through the suction line.

The four coils of copper tube on top of the chilling unit are used to expand the liquid ethyl chloride which is drawn out with the oil and gas, before it passes into the suction line. This is to prevent any frosting on the suction line.

In model H-45, a different type of chilling unit is used. This chilling unit is constructed of sheet steel, tinned inside and outside. Being spherical in shape it can withstand a tremendous pressure of vacuum.

The design and shape of this chilling unit permits free circulation of air. The surface of the chilling unit is predetermined to absorb heat units in total volume based upon a liberal consideration in the total amount of heat required to extract from this refrigerator.

There are but three ice trays furnished as standard equipment with this chilling unit. All connections are identical to the connections on the cast iron chilling unit. However, the ethyl chloride charge is reduced on this model to 2 lbs.

Fig. 6. Holmes evaporator, described herewith.

Service Operations

In servicing the Holmes machine, several standard operations are required at different times to correct various faults.

Operation of Charging Valve

There are three definite positions of this valve (Fig. 3). The operating position permits the flow of ethyl chloride from the compressor dome to the condenser. The charging position closes the port leading from the compressor dome and opens the port from the charging connection to the condenser. The gauge reading position leaves the ports from the compressor dome, gauge connection and condenser all open.

These three positions are indicated by means of an arrow stamped on the valve stem which points to "O" for operating position, "C" for charging position and "R" for gauge reading position. These letters are plainly stamped on the front rim of the valve body.

To determine how the valve is set, remove the sealing cap and note the position of the arrow on valve stem. To attach or remove pressure gauge or charging drum, the arrow on the valve stem should point to "O" operating position.

After the gauge has been installed, turn the valve stem until the arrow points to "R" reading position, to take gauge readings. To remove pressure gauge turn valve stem so that the arrow points to "O" operating position.

After the charging drum has been installed, turn valve stem until arrow points to "C" charging position to charge machine with ethyl chloride. To remove charging drum, turn valve stem so that the arrow points to "O" operating position.

Never permit the machine to run with the arrow on valve stem pointing to "C" charging position. With the valve stem in this position, the discharge port from compressor to condenser is closed and excessive pressure would be built up in the compressor housing. Always use new lead gasket when replacing the sealing cap.

Attaching Pressure Gauge

It is important in diagnosing troubles to know the operating pressures of the Holmes machine. Therefore the first step in servicing a machine should be the installation of your pressure gauge. Proceed as follows:

Remove ¼-in. blind nut on charging valve.

The pressure gauge is equipped with a short length of ¼-in. copper tubing to which is attached a ¼-in. S.A.E. nut. This nut should be attached to the charging valve where the blind nut has been removed.

Remove sealing cap from the top of the charging valve. Turn valve stem to gauge reading position "R." This will open the valve and permit pressure, which is on the compressor and condenser, to register on the gauge.

Pressure Gauge Readings

In various room temperatures, pressure gauge readings vary. An average room temperature of 75° F. would register a pressure gauge reading of approximately 17 lbs. As the room temperature rises, the pressure will also rise.

At 80° F. room temperature, the pressure gauge reading will be approximately 24 lbs. At 90° F. room temperature, the pressure gauge reading will be approximately 30 lbs.

Due to slight variances in gauges and also restricted air circulation in a room, in which the refrigerator is installed, it is impossible to state definitely the exact gauge pressure at a given room temperature. While the above figures are approximate, they are close enough to clearly indicate normal or abnormal operation of the machine.

At no time should the pressure on the Holmes machine exceed 35 lbs. If such a condition exists, due to room temperature, the refrigerator should be moved to a more desirable location. If room temperature is normal and the pressure is high, it will be due to some abnormal condition in the machine.

The following are conditions which will cause excess head pressures at normal room temperatures:

Air in the system.

An air leak on the low side of the system which is causing a continual intake of air.

Float valve needle stuck shut.

The ⅛-in. copper tubing feed line to the chilling unit plugged up. This plug may be due to foreign matter or may be caused by moisture freezing into a slug of ice.

The above readings are to be taken with the machine in operation and the chilling unit very cold. When the machine shuts down, the pressure decreases slightly. This pressure usually drops from 5 to 8 lbs. during the idle period of the machine when on the thermostatic control.

When the machine is thermostatically started, the pressure will slightly exceed normal operating pressure for a few moments.

That is, in a room temperature of 75° F., the pressure will be indicated on the gauge at approximately 19 lbs. instead of 17 lbs., when the machine first starts. This pressure will gradually be reduced to 17 lbs., as the machine continues to operate.

When the machine is first put into operation with the refrigerator warm, the pressure gauge reading will show very high. This is due to an excessive amount of heat being absorbed, which prevents the machine from functioning on its normal vacuum.

Because of this, gauge readings should be taken only when the chilling unit is cold. After the machine has been operating for a period of one hour, the gauge readings should be within one or two pounds of normal.

Attaching Vacuum Gauge

Move the lever on "Sentinel" breaker to the "off" position. Let machine remain idle five minutes. Remove blind nut on check valve. (Note—A small amount of oil and gas will escape when this nut is removed). Place cloth beneath the check valve to catch this oil. Do not permit it to run over the base of the machine or on the floor.

The vacuum gauge is equipped with a short piece of copper tubing to which is attached a ¼-in. S.A.E. nut. This nut should be attached to the check valve at the point where the blind cap was removed. Move the lever on "Sentinel" breaker to the "on" position. This will start the machine and the vacuum at which it is operating will register on your gauge.

Vacuum Gauge Readings

The Holmes refrigerator uses a flooded system. This means that the liquid ethyl chloride is deposited in the chilling unit as rapidly as it is condensed.

Under this system, the operating vacuum is dependent upon compressor efficiency, temperature of the chilling unit and an unrestricted flow of ethyl chloride. With an efficient compressor and a warm chilling unit, the vacuum gauge should register from 5 to 14 in. after the first half hour of operation. With a cold chilling unit, the vacuum gauge should register from 14 to 18 in. of vacuum. A higher or lower vacuum would indicate trouble.

How to Service Other Refrigerators

This article is one of a series published by Electric Refrigeration News to give the service man help in servicing various makes of machines. Most of the makes described to date have been "orphan" machines on which service information is no longer readily available.

Service instructions on the following makes were published in these issues:

Absopure household	March 25, 1931
Majestic hermetic	Aug. 16, 1933
Allison	May 30 & June 6, 1934
Welsbach	June 13, 20, & 27, 1934
Rice household	July 4, 1934
Wayne household	July 11, 1934
Absopure com'l	July 18, 25, & Aug. 1, '34
Iceberg	Aug. 8, 1934
U. S. Hermetic	Aug. 15, 1934
Belding-Hall ElectrICE	Aug. 22 & 29, 1934
Majestic standard	Sept. 12, 19, & 26, '34

N. Y. Oil Burner Rules Get Official Approval

NEW YORK CITY—The oil burner code for New York City, which was to have become effective early in July, and which has been in dispute ever since, has recently been upheld in an opinion by Corporation Counsel Paul Windels.

The ruling by Mr. Windels makes the new oil burner rules effective in fact, and places jurisdiction over installation and inspection with the Bureau of Combustibles except in the case of buried tanks, plans for which must be approved by the Building Department.

Ohioan Introduces New Refrigerant Gas Mask

MAUMEE, Ohio—Herbert Garnett of this city has introduced a gas mask for protection against ammonia, sulphur dioxide, or chlorine fumes. A canister is located in the lower part of the mask, and contains a filtering agent. It sells for $7.50. The mask is also available with a plate glass lens as used by city fire departments in smoke and fumes.

2 New Distributors Named By Alco Valve Co.

ST. LOUIS—Two new distributors have been appointed by Alco Valve Co., Inc., manufacturer of automatic refrigeration control valves.

Himelblau-Byfield & Co., 228 North LaSalle St., Chicago, is distributor for northern Illinois and northern Indiana, and J. M. Oberc, Inc., 1203 Stanley Ave., Detroit, will handle the distribution for the Detroit area.

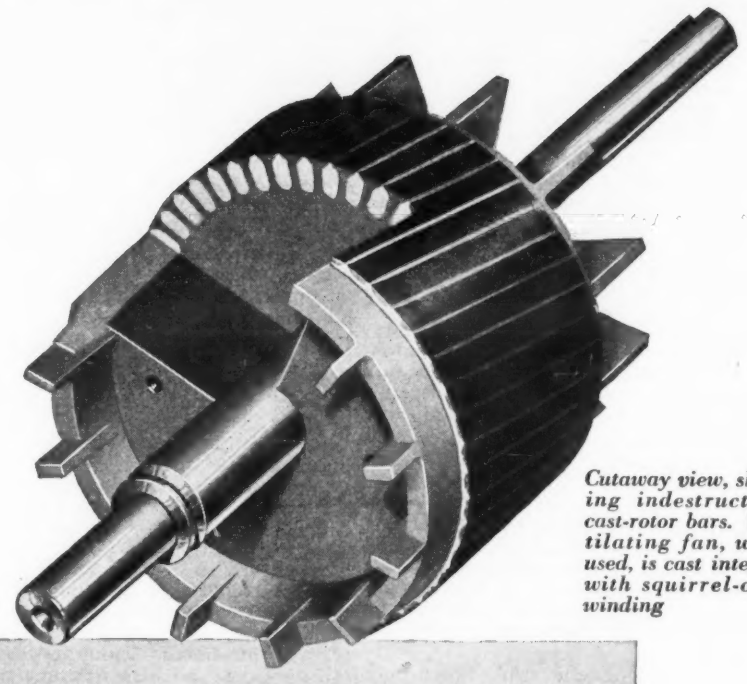
G-E Develops Trailer for Laundry Appliances

CLEVELAND—A trailer for transporting laundry equipment, wheelbarrow fashion, right into the prospect's home, has been introduced by General Electric Co. for use by dealers.

The trailer has a 450-lb. capacity and weighs 200 lbs.

INDESTRUCTIBLE CAST-ALUMINUM ROTOR

assures quietness, permanence and "care-free" performance



Cutaway view, showing indestructible cast-rotor bars. Ventilating fan, when used, is cast integral with squirrel-cage winding

A FEATURE of the 1935 G-E CAPACITOR-MOTOR is its one-piece aluminum rotor—no soldered or welded joints

IT IS another assurance of lasting, "trouble-free" service. Its squirrel-cage winding is a solid-aluminum casting formed by a unique high-pressure method developed by G-E engineers.

This cast rotor assures you the advantages of good balance, permanent magnetic characteristics, quiet operation, and "trouble-proof" construction.

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END-PLAY SILENCERS
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CAST-ALUMINUM ROTOR
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QUIET, RELIABLE SWITCH

Bulletin GEA-977C contains complete information. Address the nearest G-E office, or General Electric, Dept. 6A-201, Schenectady, N. Y.

Type KC capacitor-motor with standard base

Type KC capacitor-motor with automatic belt-tightener base

070-67

GENERAL ELECTRIC

Text of Refrigerating Machinery Industry NRA Code

Editor's Note: The code for the refrigerating machinery industry, approved recently by the National Recovery Administration, takes on added significance because of the possibility that the code may be given official status as the official pact governing the commercial refrigeration industry as well as the industrial refrigeration machinery manufacturers.

SUPPLEMENTARY CODE OF FAIR COMPETITION FOR THE REFRIGERATING MACHINERY INDUSTRY

A Division of the Machinery and Allied Products Industry

Article I—Purposes

To effectuate the policy of Title I of the National Industrial Recovery Act, the following provisions are established as a Supplemental Code of Fair Competition for the Refrigerating Machinery Subdivision of the Machinery and Allied Products Industry, and together with the Code of Fair Competition for the Machinery and Allied Products Industry, shall be the standard of fair competition for this Subdivision, and shall be binding on every Employer therein.

Article II—Definitions

"Applicant" means the Refrigerating Machinery Association, a trade organization, all members of which are engaged in the manufacture for sale of the products of the Refrigerating Machinery Subdivision of the Machinery and Allied Products Industry.

"Industry" means the Machinery and Allied Products Industry, as defined in its Code as approved by the President, and as such definition may from time to time be amended.

"Subdivision" means the Refrigerating Machinery Subdivision of the Machinery and Allied Products Industry as defined and set forth in paragraph 26, Article II of the Code of Fair Competition for the Machinery and Allied Products Industry as follows:

"Refrigerating Machinery Subdivision" means the engineering, design, and production of commercial and industrial ice making and refrigerating machinery and equipment incidental thereto. It is expressly stated for the purposes of this Code that it is to apply to the engineering, design, manufacture, and sale, as well as erection and/or installation of such machinery and equipment incidental thereto. Any work or process incidental to and carried on by an Employer at his plant or elsewhere as a part of the manufacture of any product of the Subdivision shall be governed by the provisions of this Code rather than any other Code.

"Code" means the Code of Fair Competition for the Machinery and Allied Products Industry as approved by the President, March 17, 1934, and as from time to time amended.

"Person" means a natural person, a partnership, a corporation, an association, a trust, a trustee, a trustee in bankruptcy, a receiver or other entity.

"Employer" means any person engaged in this Subdivision either on his own behalf or as an employer of labor.

"Employee" means any one who is employed in the Subdivision by any such Employer.

"The Act" means Title I of the National Industrial Recovery Act.

"The President" means the President of the United States.

"The Administrator" means the Administrator for Industrial Recovery.

"Basic Code Authority" means the Code Authority for the Machinery and Allied Products Industry as constituted by the Code.

"Code Authority" means the Code Authority constituted for this Subdivision as provided by the Code and by this Supplemental Code.

"Group Code Authority" means the Code Authority for any group or product classification within this Subdivision.

"Publish" means to make available to the public.

Article III—Employment Provisions

The following Articles of the Code, viz: Article III, "Working Hours"; Article IV, "Wages"; and Article V. "General Labor Provisions" are hereby made a part of this Supplemental Code, with the same effect as if they were written into this Supplemental Code.

Article IV—Adoption of Other Provisions of Code

The following Articles of the Code, viz; Article II, "Definitions;" Article VI, "Administration," to the extent that they shall be applicable to this Supplemental Code as such or as it may hereafter be administered as an autonomous Code; and Article VIII, "Modifications and Termination," are hereby adopted and made a part of this Supplemental Code with the same effect as if they were written into this Supplemental Code.

Article V—Administration*

(a) The permanent Code Authority to administer, supervise and to facilitate the enforcement of the Code of this Supplemental Code, heretofore duly elected in accordance with Article VI, Section (g) of the Code, shall be (if such method of election is approved by the Administration) the Code Authority of this Subdivision until its successors are duly elected and qualified in accordance with the procedural rules and regulations of this Subdivision (duly adopted in accordance with Article VI, Section (g) of the Code) and with the following sections of this Article V. When its successors shall have been duly elected and qualified, they shall constitute the Permanent Code Authority.

(b) It being found necessary in order to support the Administration of this Supplemental Code and to maintain the standards of fair competition established hereunder and to effectuate the policy of the Act, the Code Authority is authorized:

1. To incur such reasonable obligations as are necessary and proper for the foregoing purposes, and to meet such obligations out of funds which may be raised as hereinafter provided and which shall be held in trust for the purposes of the Code;

2. To submit to the Administrator for his approval, subject to such notice and opportunity to be heard as he may deem necessary:

(A) An itemized budget of its estimated expenses for the foregoing purposes, and

(B) An equitable basis upon which the funds necessary to support such budget shall be contributed by all employers of the Subdivision;

(C) After such budget and basis of contribution have been approved by the Administrator, to determine and obtain equitable contributions as above set forth by all employers of the Subdivision, and to that end, if necessary, to institute legal proceedings therefor in its own name.

3. Each employer of the Subdivision shall pay his or its equitable contribution to the expenses of the maintenance of the Code Authority, determined as hereinabove provided, and subject to rules and regulations pertaining thereto issued by the Administrator. Only employers of the Subdivision complying with the Code and contributing to the expenses of its administration, as hereinabove provided, unless duly exempted from making such contributions, shall be entitled to participate in the selection of the members of the Code Authority or to receive the benefits of any of its voluntary activities or to make use of any emblem or insignia of the National Recovery Administration.

4. The Code Authority shall neither incur nor pay any obligation in excess of the amount thereof as estimated in its approved budget, except upon approval of the Administrator; and no subsequent budget shall contain any deficiency item for expenditures in excess of prior budget estimates except those which the Administrator shall have so approved.

(c) In order that the Code Authority shall at all times be truly representative of the Subdivision and in other respects comply with the provisions of the Act, the Administrator may prescribe such hearings as he may deem proper; and thereafter if he shall find that the Code Authority is not truly representative or does not in other respects comply with the provisions of the Act, may require an appropriate modification in the method of selection of the Code Authority.

(d) Action by Employers in any Subdivision meeting for the election of Code Authority shall be by vote of the Employers entitled to vote as provided in Section (b3) of this Article V, and who are present in person or by proxy, each such Employer to have one vote only.

(e) Action by Employers in any Subdivision meeting for the adoption of procedural rules, revisions or additions to the Supplemental Code, or the transaction of other business of the Subdivision under this Supplemental Code, shall be by vote of the Employers who are entitled to vote thereat as provided in Section (b3), Article V of this Supplemental Code and are present in person or by proxy duly executed and filed with Code Authority; cast and computed in the manner provided in Section (d), Article VI of the Code. All questions as to the number of votes which each Employer shall be entitled to cast at any meeting of Employers other than the meeting held to vote for the election of the permanent Code Authority shall be determined by Code Authority, in accordance with Section (d), Article VI of the Code.

(f) Employers in this Subdivision having a common interest and common problems may be grouped by Code Authority for administrative purposes. There shall be a Group Code Authority approved or appointed by Code Authority for each such group.

(g) If formal complaint is made to Code Authority that provisions of this Supplemental Code have been violated by any Employer, Code Authority or the proper Group Code Authority shall investigate the complaint, and to that end, may to the such investigation, examination or extent permitted by the Act, cause audit to be made, as may be deemed necessary. If such investigation is made by Group Code Authority, it shall report the result of such investigation or audit to Code Authority for action.

(h) The Code Authority may appoint a Trade Practice Committee which shall meet with the Trade Practice Committees appointed under such other Codes as may be related to the Subdivision for the purpose of formulating fair trade practices to govern the relationships between production and distribution Employers under this Supplemental Code and under such others to the end that such fair trade practices may be proposed to the Administrator as amendments to this Supplemental Code and such other Codes.

Article VI

Accounting and Costing

The Code Authority shall cause to be formulated an accounting system and methods of cost finding and/or estimating capable of use by all Employers of this Subdivision. After such system and methods have been formulated, full details concerning them shall be made available to all employers. Thereafter all Employers shall determine and/or estimate costs in accordance with the principles of such methods.

Article VII

Selling Below Reasonable Cost

Section 1. When the Code Authority determines that an emergency exists in this Subdivision and that the cause thereof is destructive price-cutting such as to render ineffective or seriously endanger the maintenance of the provisions of this Supplemental Code, the Code Authority may cause to be determined the lowest reasonable cost of the products of this Subdivision, such determination to be subject to such notice and hearing as the Administrator may require. The Administrator may approve, disapprove, or modify the determination. Thereafter, during the period of the emergency, it shall be an unfair trade practice for any employer of the Subdivision to sell or offer to sell any products of the Subdivision for which the lowest reasonable cost has been determined at such prices or upon such terms or conditions of sale that the buyer will pay less therefor than the lowest reasonable cost of such products.

When it appears that conditions have changed, the Code Authority, upon its own initiative or upon the request of any interested party, shall cause the determination to be reviewed.

Section 2. The foregoing Section (1) shall not apply to (a) dropped lines, as (b) seconds, or (c) inventories which must be converted into cash to meet emergency needs, all of which may be disposed of by any employer at any price and on any terms or conditions, but only if such employer, not less than two weeks before such proposed disposal, has filed with Code Authority a statement in writing setting forth the facts of, and reasons for, such proposed disposal and the price terms and conditions of sale, and Code Authority has not, (with the approval of the Administrator), before the termination of such two week period, in writing, disapproved the proposed disposal. Notice of such disposal, if not disapproved, shall be sent immediately to all employers manufacturing products of equivalent design, character, quality or specifications, who may sell such products at prices and on terms and conditions as favorable as those stipulated in the proposed disposal when meeting the competition of such proposed disposal.

Section 3. The foregoing Section (1) shall not apply to a sale made in order to meet competition of products manufactured outside the United States. For such disposal, any employer may sell, at prices and on terms and conditions as favorable as those of the competing foreign product, but only if he has first reported to the Code Authority his intention so to sell, and the facts as to the competition which justifies such action.

Article VIII—Price Lists

(a) If and when the Code Authority of this Subdivision determines that in any branch or group of the Subdivision it has been the generally recognized practice to sell a specified product on the basis of net price lists, or price lists with discount sheets, and terms of sale and payment, each employer shall, within ten (10) days after notice of such determination, file with the Code Authority a net price list, or a price list and discount sheet, as the case may be, individually prepared by him, showing his current prices, or prices and discounts, and terms of sale and payment, for such specified product, and the Code Authority shall immediately publish and send copies thereof to all known employers who are cooperating in this Supplemental Code as described in Section (b3) of Article V hereof.

Revised price lists and/or discount sheets and/or terms of sale and payment for such product may be filed from time to time thereafter with the Code Authority by any employer, but such revised price lists and/or discount sheets and/or terms of sale and payment shall be filed with the Code Authority ten (10) days in advance of the effective date. Copies of such revised price lists and/or discount sheets and/or terms of sale and payment, for such product, with notice of the effective date specified, shall be immediately published and sent to

(b) If and when the Code Authority shall determine that in any branch or group of the Subdivision not now selling its product on the basis of price lists, with or without discount sheets, with terms of sale and payment, the distribution or marketing conditions in said branch or group are the same as, or similar to, the distribution or marketing conditions in a branch or group of the Subdivision where the use of price lists, with or without discount sheets, and/or terms of sale and payment, is well recognized, and that a system of selling on net price lists or price lists and discount sheets with terms of sale and payment for such product should be put into effect in such branch or group, then each employer of such branch or group shall within ten (10) days after notice of such determination, file with the Code Authority net price lists or price lists and discount sheets, containing terms of sale and payment, showing his current prices and discounts and terms of sale and payment, and such price lists and/or discount sheets and/or terms of sale and payment may be thereafter revised in the manner hereinabove provided; and such methods of pricing and revisions thereof shall be "published and sent" as described in Article VIII (a); provided, however, that the Code Authority shall make no determination to place any product of the Subdivision (not now on a price list basis) on a price list basis, as provided in this paragraph (b) of Article VIII, unless the employers who are at that time engaged in manufacturing such product and are at that time cooperating, have given their affirmative consent to such determination. The eligibility requirements, method and effect of such voting shall be the same as provided in section (e) of Article V.

Each employer shall prepare and shall furnish the Code Authority for distribution with such number of copies of his price lists and/or discount sheets and/or terms of sale and payment as Code Authority may prescribe.

(c) No employer shall sell directly or indirectly by any means whatsoever, any product of the Subdivision covered by provisions of this Article VIII at a price or at discounts, or on terms of sale and payment, different from those provided in his own current net price lists, or price lists and discount sheets, provided that nothing in the above shall prevent an employer from adding to his own price and/or price list and discount sheets by increasing his job price to include unusual selling, engineering, servicing, financing, financial risks, or other similar special charges provided, however, that in the event of an employer quoting a higher price than the price published in his own price list and/or price list and discount sheets, to take care of unusual selling, engineering, servicing, financing, financial risks, or other similar special charges, he shall not subsequently quote a lower price on said prospective sale than that price first quoted, except in accordance with revised price lists duly filed or unless he simultaneously eliminates part or all of the unusual engineering, servicing, financing, financial risks or other similar special charges, for which a corresponding reduction only may be made.

(d) Wherever by the provisions of this Article VIII an employer is or may be required to or permitted to file terms of sale and payment, such terms shall mean usual or standard terms, and to cover any special and/or unusual terms definite formulae for determining such special and/or unusual terms shall be filed.

(e) If and when Code Authority shall determine that it is undesirable to continue the filing of net price lists and/or price lists with discount sheets and/or fixed terms of sale and payment on any product in respect of which such filing has heretofore been required, such filing shall cease and the provisions of this Article shall not apply to such product unless and until Code Authority shall again determine that such filing be made.

(f) The Code Authority shall from time to time, with the approval of the Administrator, formulate, prescribe and distribute to persons in the Industry regulations with respect to minimum cash payments, and/or maximum deferred terms, and/or carrying or finance charges.

Article IX—Unfair Trade Practices

The following practices constitute Unfair Methods of Competition for employers of the Subdivision. They are prohibited and are in violation of this Code:

1. No Employer shall knowingly make any misrepresentation in connection with the sale or advertisement for sale and/or marketing of any products of this Subdivision with the intent or effect of misleading or deceiving buyers, or prospective buyers, regarding their quality, composition, or service features.

2. No employer shall give, permit to be given, or directly offer to give anything of value for the purpose of influencing or rewarding the action of any employee, agent or representative of another in relation to the business of the employer of such employee, the principal of such agent or the represented party, without the knowledge of such Employer, principal or party. This commercial-bribery provision shall not be construed to prohibit free and general distribution of articles commonly used for advertising except so far as such articles are actually used for commercial bribery as hereinabove defined.

3. No Employer shall induce or attempt to induce by any means any party to a commercial agreement with another Employer to violate such agreement.

4. No Employer shall secretly offer or make any payment or allowance of a rebate, refund, commission credit, unearned discount or excess allowances, whether in the form of money or otherwise, nor shall any Employer secretly offer or extend to any customer any special service or privilege not extended to all customers of the same class, for the purpose of influencing a sale.

5. No Employer shall publish or circulate threats of suits for infringement of patents or trade marks, or of any other legal proceedings not made in good faith, with the tendency or effect of harassing competitors or intimidating their customers.

6. No Employer shall procure, otherwise than with the consent of any other employer, any information concerning the business of such employer, which is properly regarded by such employer as a trade secret or confidential within his or its organization.

7. No Employer shall accept a contract wherein the Employer assumes responsibility for indirect or consequential damages nor shall any Employer grant a guaranty covering defective workmanship, material or design to extend for a longer period than one year. The term "indirect or consequential damages" is defined to mean damages (1) other than, or in excess of, the reasonable cost of repairing or replacing any defective machinery, equipment or parts furnished by the Employer under the contract, or (2) other than stipulated, liquidated damages relating to delivery, completion and/or performance.

8. No Employer shall, guarantee cost of power consumed or cost of products produced by products of the Subdivision.

9. No Employer shall, except in

(*Concluded on Page 17, Column 1*)

RANCO THERMOSTAT

5 NEW KRS MODELS FILL MOST REPLACEMENT NEEDS

Ranco Thermostat Models KRS—available in 5 specification combinations of the new stainless steel Type KR—have been designed to meet the service requirements of practically every household refrigerator, water cooler and ice cream cabinet. Bulletin supplied on request.

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"The leading cooler for water, beer and other beverages"
Write for Catalog
Temprite Products Corporation
(Formerly Liquid Cooler Corporation)
1349 Milwaukee East :: Detroit

Text of Machinery Industry Code

(*Concluded from Page 16, Column 5*)

order to comply with the written specifications of any agency of the Federal Government, State Government, or any Subdivision thereof, accept contracts embodying penalty or bonus clauses relative to dates of completion of contracts.

10. No Employer shall guarantee cost of maintenance of products of the Subdivision.

11. No Employer shall make an allowance or trade-in value to a buyer for used or second-hand products.

12. No Employer shall indulge in destructive price-cutting.

Article X—Sales for Export

The provisions of this Supplemental Code concerning pricing and marketing shall not apply to direct export sales of any product. A similar exemption may be granted by the Code Authority as to sales of any product destined ultimately for export. The term "export trade" wherever used in this Code means solely trade or commerce in goods, wares, or merchandise exported, or in the course of being exported from the United States or any Territory thereof to any foreign nation; but the words "export trade" shall not be deemed to include the production, manufacture, or selling for consumption or for resale, within the United States or any Territory thereof, of such goods, wares, or merchandise, or any act in the course of such production, manufacture, or selling consumption or for resale.

Article XI—Modifications

(a) As provided by Section 10 (b) of the Act, the President may from time to time cancel or modify any order, approval, license, rule or regulation issued under Title I of the Act. Any amendments, additions, revisions or supplements of this Supplemental Code authorized by the affirmative vote of 66 2/3 per cent of the Employers in this Subdivision shall be in full force and effect upon approval by the Administrator. The eligibility requirements, method and effect of such voting shall be the same as provided by Article V, Section (e) hereof.

Article XII—Withdrawal

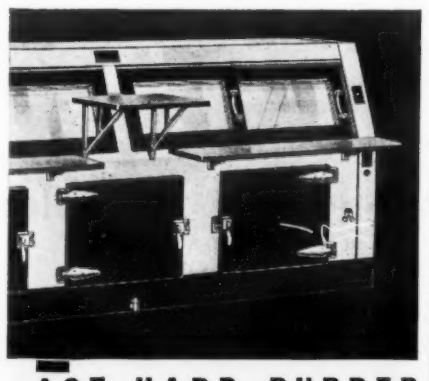
Upon thirty (30) days' notice to the Basic Code Authority and to the Administrator, this Subdivision may, upon the concurring affirmative vote of Employers, within the said Subdivision entitled to cast two-thirds or more of all the votes that might be cast by all Employers within the Subdivision entitled to vote thereon, withdraw from the jurisdiction of the Basic Code Authority. The eligibility of voters shall be in accordance with Article V, Section (b3) and the method and effect of such voting shall be in accordance with the provisions of Article V, Section (e) hereof. After and in the event such withdrawal is accomplished this Supplemental Code, together with the provisions of the Code shall become and be the sole code governing this Subdivision, and the Code Authority shall for this Subdivision become and be the sole Code Authority and shall perform all the functions with respect thereto.

Article XIII—Monopolies

Applicant imposes and shall impose no inequitable restrictions on membership therein. The Supplemental Code presented by it is not designed to promote monopoly, and shall not be so construed or applied as to oppress or eliminate small enterprises or discriminate against them, and is designed to effectuate the policy of the Act.

Article XIV—Effective Date

This Supplemental Code shall become effective and binding on all employers engaged in the Subdivision on the eleventh day after its approval.



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Consumers Advisory Board Seeks New Grading System

WASHINGTON, D. C. — Development of a model system of terms for designating grades and qualities of commodities has been undertaken by the American Standards Association at the request of the NRA Consumers Advisory Board.

The project is intended to eliminate misleading and confusing terms by defining exactly what each grade designation means. In a survey of the subject prepared by the standard unit of the Consumers Advisory Board, it is shown that "U. S. No. 7" cheese, which might be mistaken by consumers for top quality, actually rates third grade; "fancy" apples are usually top grade; "fancy" brooms are second. A "No. 1" mirror is not the best grade of mirror on the market, "AA" and "A" ranking above it. "A1," a term generally implying excellence, is given to the lowest grade of silverware. For many important commodities, such as gasoline, specific descriptions of quality exist but are not available to consumers.

The Consumers Board's request to the American Standards Association is for a thoroughgoing and immediate study project on nomenclature, with the aims described as follows:

"The study should have for its main objective the setting up of a simple model method (or methods) of designating qualities or grades of goods. It should be carried out cooperatively by organized groups of consumers, producers, distributors, advertising and marketing specialists, and governmental agencies. The standard method to be set up should be applicable alike to consumer goods purchased at retail as well as in the wholesale market, and to industrial products generally.

"It should not mislead or conceal facts from the consumer by piling up superlatives, or by the use of concealed top grades, or by similar devices, which the study clearly shows to be characteristic of most of the schemes now in use.

"It should be so simple as to be easily understood by the average housewife. It should be flexible, and easily introduced step by step as system of grading are set up in new fields, and as old grading rules are revised."

In a letter agreeing to undertake development of the model system requested, P. G. Agnew, secretary of the Association said, in part:

"This is an extensive and difficult undertaking. If, however, it can be carried out, even in limited fields, it will be of far-reaching importance in enabling consumers to know precisely what they are buying; in simplifying distribution problems, and in promoting fair dealing.

"The American Standards Association will proceed promptly with the first stage of the proposed undertaking, viz: conferences with producer, consumer, distributor and governmental groups concerned, whose cooperation will be essential."

The report of the standards unit of the Consumers Board states that present descriptive terms "consist largely of superlatives piled up to such an extent as to make it entirely unsafe for a consumer to take them at face value, else he would be misled into believing the goods to be of a much higher quality than they actually are."

"Not a single case has been found," the report continues, "in which a term has been used which might lead a customer to underestimate the quality of a product." The new system will substitute terms of "fixed meaning for such laudatory adjectives as Supreme and Super," it was emphasized.

Respecting the shifts in advertising emphasis, which would necessarily take place if accurate descriptive terms should supplement laudatory adjectives on consumer goods labels, the report says:

"The vanguard of the advertising profession has been consistently aware of the urgent need further to enlighten the consumer by giving him more accurate information on the product. Consumer distrust of the advertising ethics which permit all products to be advertised as of highest quality could be dissipated were a series of grade names to become part of the advertising vocabulary. An accurate identification of grade is not incompatible with a colorful description of the many qualities incapable of standardization. Brands will always differ."

The American Standards Association is a federation of technical societies, trade associations and government bodies which acts as a clearing house for the standardizing of the commodities of members. It cooperates with the National Bureau of Standards. In the present project, its function would be to get industries and consumers alike to agree on grade terms by which the thousands of commodities on retail counters, as well as those in the wholesale field could henceforth be described.

New Kelvin Kitchen Marks Extension of Home Service Work

DETROIT—A stride toward broadening its program of home economics activities and refrigeration research has been taken by Kelvinator Corp. in opening its new Kelvin Kitchen at the company's Detroit plant.

Looking out onto a large auditorium, the kitchen proper, flanked by an ensemble of ivory and apple-green cabinets, occupies a spacious, slightly raised stage. In sharp contrast to the practical beauty of the indirectly-lighted kitchen, the auditorium is decorated in atmospheric blue and silver, with inside shutters of modernistic pattern introducing a rich copper color that blends with the coppery-peach tones of the kitchen walls.

Effect is further enhanced by a twilight-blue arched ceiling, in which are set modernistic chandeliers, silver stars, and banks of clouds.

Focal point of attention in the new Kelvin Kitchen is a model 7 deluxe

Has New Workshop

PAULINE PEACOCK

Kelvinator, largest in the company's current domestic line. It is centered in a broad alcove at the rear of the stage, to impress the visitor with the importance of electric refrigeration in the modern home.

As a laboratory, the new Kelvin Kitchen will continue research in food preservation; develop new methods of preparation; furnish tested recipes to newspapers; publish "Kelvinator Cookery," a monthly bulletin for Kelvinator owners; and supervise a field staff of home economists.

Guests of the company, and attendants at demonstrations, lectures, and meetings, will frequently be served breakfasts, luncheons, and teas prepared in the kitchen, according to Miss Pauline Peacock, its director.

Dates Set for Last 6 of Direct Mail Shows

NEW YORK CITY—Dates for the last six direct-mail shows of the 15 exhibits to be held in 1934 were announced recently by Henry Hoke, executive manager of the Direct Mail Advertising Association.

The schedule follows:

Boston, Oct. 9-12, Hotel Statler, Leonard J. Raymond, 80 Broad St., general chairman. Seventeenth annual convention.

New York, Oct. 15-20, Horace H. Nahm, 352 Fourth Ave., general chairman. This exhibit will be combined with the National Business Show.

Philadelphia, Oct. 24-26, Bellevue-Stratford hotel, Howard Hovde, University of Pennsylvania, general chairman.

Cincinnati, Oct. 31-Nov. 2, Gibson hotel, Frank Adams, Storrs-Schaefer Co., general chairman. Local advertising clubs are cooperating.

Detroit, Nov. 6-7, Statler hotel, Leslie C. Allman, Fruehauf Trailer Co., general chairman.

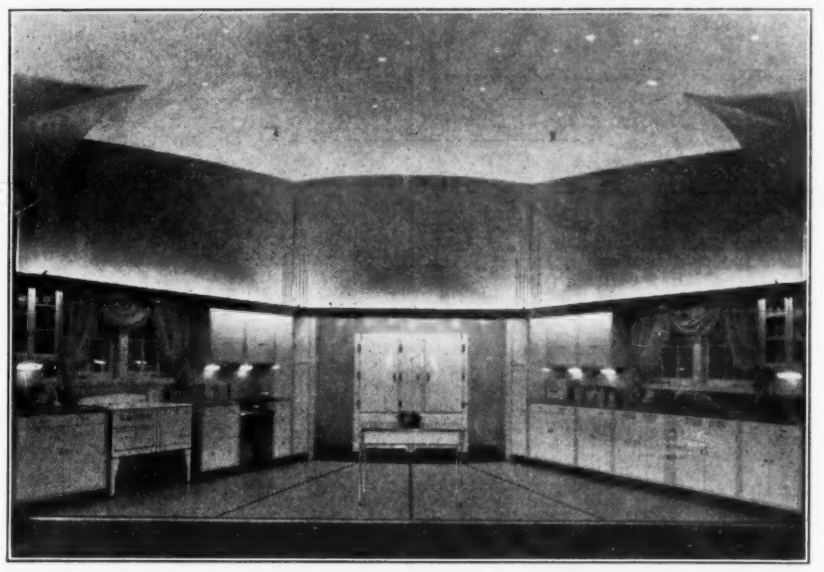
Chicago, Nov. 19-26, Stevens hotel, Milton Crume, Butler Brothers, general chairman.

Scholarships Offered in Purchasing Course

CHICAGO—Three scholarships for the first-semester course in purchasing at the School of Commerce, Northwestern University, are being given by the Purchasing Agents' Association here.

The first will be awarded to the student who submits the best 1,000-word paper before Sept. 12 on some pertinent purchasing subject. Second scholarship will be given to a store or purchasing employee recommended by some member of the Association, and the third to a student in the Northwestern School of Commerce.

At Kelvinator's Factory



This new kitchen has been opened by Kelvinator Corp. to permit increased activity in cold cookery demonstrations and refrigeration research by its home economics department.

'Better Homes in America Project' to Offer Results of Planning to Prospective Builders

NEW YORK CITY—The typical American family with a moderate income will get the advantages of expert planning and purchasing for every product used in an "ideal" home, through a consumer project of national scope launched in New York City recently. On that date, Mayor Fiorello H. LaGuardia broke ground for the erection of "America's Little House."

"Better Homes in America," an educational, non-profit organization which has sponsored some 15,000 exhibit homes throughout the country in the past 11 years, is building this special demonstration house in the heart of New York—at Park Ave. and 39th St., just three blocks from the Grand Central Terminal.

To Use Standard Furnishings

Every item of the materials, furnishings, and equipment of the Little House will be selected by experts of the Better Homes Committee according to stringent consumer standards, and bought in the open market at current retail prices. As far as possible, nationally distributed, branded products will be used. Each one—from the heating plant in the cellar to the fountain pen on the living room desk—will have an actual point-of-use demonstration under ideal consumer conditions.

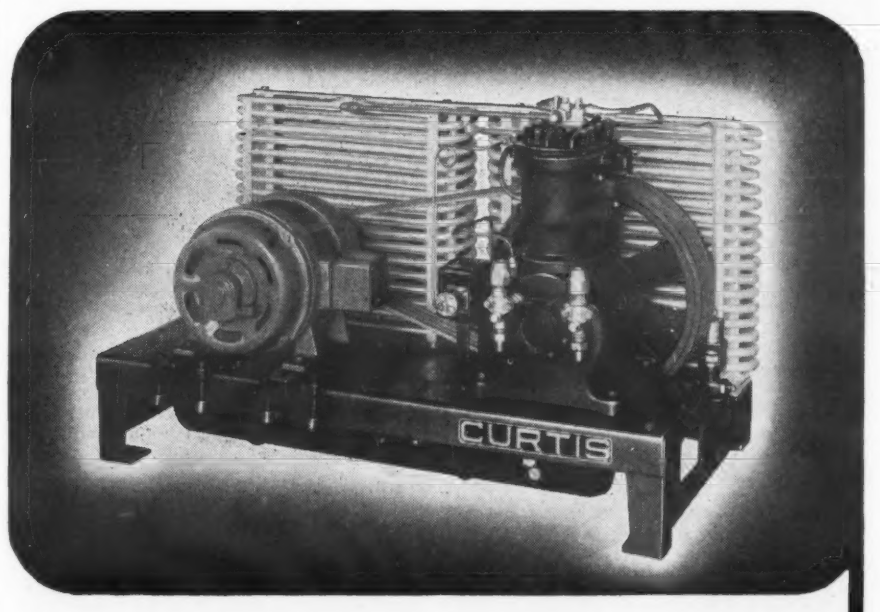
The Little House is designed to show how much beauty and efficiency in housing the 1934 dollar will buy. In fact, according to housing authorities, it will be possible to build a similar house in any small city or suburb, for from six to eight thousand dollars, depending on the costs of materials and labor in different sections of the country.

Planned for the average family of five, without a maid, it will be equipped with many of the newest devices for labor saving and comfort. There will be a large modern nursery, a model kitchen, and a new type of room called "utility room" provided with machines to do work as various as washing and ironing, vegetable peeling and food mixing.

Committee Members

The project is directly under the auspices of the newly created New York City Committee of Better Homes in America, whose chairman, Mrs. William Brown Meloney, was one of the founders of the National Better Homes movement and has been identified with it since 1923. Associated with her are Mrs. Robert G. Mead, known for her interest in philanthropic educational work; Dr. Lillian Gilbreth of the American Society of Mechanical Engineers, an authority on motion-saving study; Dr. Mary Swartz Rose, professor of nutrition at Columbia University and a recognized authority on dietetics; Mrs. Emily Post, whose books on etiquette and home decoration are familiar to readers everywhere; and Dr. S J. Crumbine, general director of the American Child Health Association; and others.

The Columbia Broadcasting System has guaranteed funds to support the building and maintenance of the Little House for one year. In the garage adjoining the house, CBS will establish a regular broadcasting studio from which it will broadcast many types of sustaining programs promoting the educational aims of the Better Homes movement.



CURTIS REFRIGERATION
Units to fit every need

CURTIS, one of the oldest compressor manufacturers, offers one of the most complete lines of refrigerating units—1/6th to 2 H. P. air cooled; 1/3rd to 5 H.P. water cooled—reflecting 80 years engineering, designing and manufacturing experience. Some desirable territories are still open for reliable distributors. *Write for details.*

80 SUCCESSFUL YEARS ESTABLISHED 1854

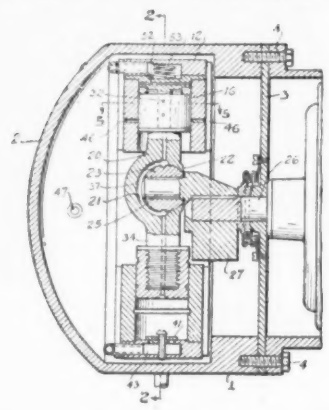
CURTIS
Curtis Refrigerating Machine Co.
Division of Curtis Manufacturing Co.
1912 Kienlen Ave., St. Louis, U. S. A.
518H Hudson Terminal New York City

PATENTS

Issued Sept. 25, 1934

1,974,421. COMPRESSOR. Charles F. Haunz, Buffalo, N. Y., assignor to Henry Vogt Machine Co., Louisville, Ky., a corporation of Kentucky. Original application April 19, 1933. Serial No. 666,924. Divided and this application July 13, 1933. Serial No. 680,311. 9 Claims. (Cl. 230—206.)

1. In a compressor, the combination comprising means for compressing gaseous fluid and means for pumping liquid



1,974,421

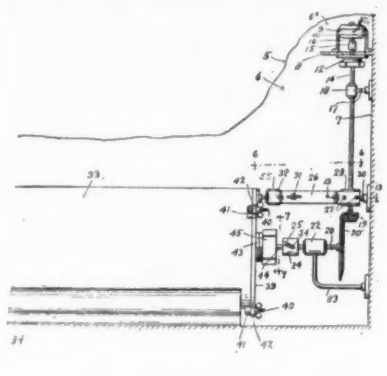
lubricant to said compressing means, a casing forming a chamber at least in part surrounding both said compressing and pumping means, a gaseous fluid inlet to said chamber, said compressing and said pumping means being each provided with an intake in communication with said chamber respectively, at a point remote from the bottom thereof and at a point adjacent the bottom, means providing an overflow of lubricant from said compressing means to said chamber, the latter forming a gravity separator for liquid mingled with the gaseous fluid entering said casing.

1,974,478. APPARATUS FOR PRODUCING BLOCKS OF CARBON DIOXIDE SNOW BY MEANS OF LIQUID CO_2. Guglielmo Weber, Pergine Valdarno, Italy. Application Dec. 16, 1930. Serial No. 502,637. In Italy Dec. 19, 1929. 5 Claims. (Cl. 62—121.)

1. An apparatus for producing carbon dioxide ice blocks from liquid CO_2 comprising a central chamber in which the liquid CO_2 expands into carbon dioxide snow, a second chamber embracing the first and having one end open, a third chamber enclosing the first two chambers and being in communication with the second through the open end thereof, a helically shaped conduit disposed in the third chamber and coiled about the second chamber to lead the liquid CO_2 into the first chamber, and means to permit the unsolidified liquid CO_2 to escape as a gas into the second chamber to cool the first and then into the third chamber to cool the helically shaped conduit.

1,974,512. FREEZER FOR MECHANICALLY OPERATED REFRIGERATING UNITS. Fred Schaljo and Jack Miller, Detroit, Mich. Application Nov. 8, 1932. Serial No. 641,774. 1 Claim. (Cl. 259—69.)

A refrigerator comprising upper and lower compartments, a motor located in the upper compartment, a shaft connect-

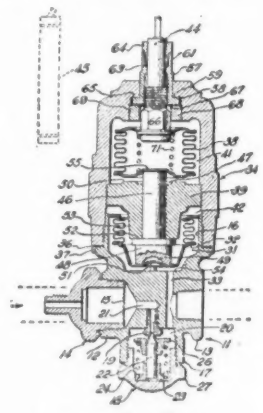


1,974,512

ed with the motor and passing into the lower compartment, means for rotatably supporting the shaft, a horizontal shaft rotatably supported in the lower compartment, gears connecting the two shafts together, a slotted socket head connected to the horizontal shaft, spring jaws supported in the lower compartment, and a container located in the lower compartment and having a projection thereon engaging the spring jaws when the container is placed in the compartment and being released by the jaws when the container is removed from the compartment, an agitator in the container including a shaft passing through a wall of the container, said shaft entering the socket in the head when the container is placed in the compartment and pins on the end of the shaft for engaging the slots of the head when shaft enters the head.

1,974,631. REFRIGERANT CONTROL VALVE. Franklin G. Slagel, Buffalo, N. Y., assignor to Fedders Mfg. Co., Inc., Buffalo, N. Y. Application Jan. 19, 1933. Serial No. 652,519. 4 Claims. (Cl. 236—92.)

1. In a refrigerant control device, a body, a valve therein, sealing bellows mounted on the body and operable in response to low side pressure to actuate the valve, a thermostatic bellows respon-



1,974,631

sive to temperature conditions, a housing secured to the body and cooperating to enclose said sealing bellows, means in said housing for mounting said thermostatic bellows, a wall in said housing separating said bellows and dividing the interior of the housing into two chambers, said wall having a stop portion formed on one face and engageable by said thermostatic bellows to limit the movement thereof, said wall on its opposite face having a seat formed thereon, and a rod extending through said wall and connecting the sealing bellows for operation by the thermostatic bellows, said rod having a valve face adapted to engage said seat both to act as a stop for the sealing bellows and to prevent communication between said chambers.

1,974,681. APPARATUS FOR THE PRODUCTION OF LIQUID AND SOLID CARBON DIOXIDE. Guido Maiuri, Aldwych, London, England, assignor to Maiuri Refrigeration Patents Limited, Aldwych, London, England. Application April 17, 1934. Serial No. 720,976. In Great Britain Feb. 20, 1934. 10 Claims. (Cl. 62—119.)

In an absorption refrigerating apparatus for the refrigeration of carbon dioxide to temperatures of the order of the triple point temperature of carbon dioxide, means for compressing said carbon dioxide to slightly above the triple point pressure of carbon dioxide, an evaporator refrigerating said compressed carbon dioxide, an absorber connected to said evaporator, a pump chamber connected to said absorber, a boiler connected to said pump chamber, a second absorber connected to said boiler, a second pump chamber connected to said second absorber, a second boiler connected to said second pump chamber, and a condenser connected to said second boiler and to said evaporator.

1,974,716. ABSORPTION TYPE REFRIGERATING APPARATUS. Peter Kohler, Stockholm, Sweden, assignor, by mesne assignments, to Electrolux Servel Corp., New York, N. Y., a corporation of Delaware. Application April 20, 1931. Serial No. 531,435. Renewed July 2, 1932. In Germany July 25, 1930. 19 Claims. (Cl. 62—119.5.)

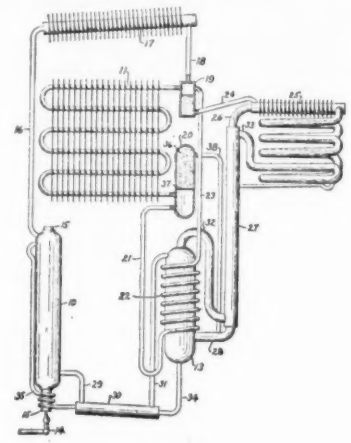
18. In an absorption refrigerating system of the pressure equalized type the method of circulating absorption liquid between the generator and absorber which includes, applying vapor under pressure to raise absorption liquid from the generator to a higher level toward the absorber, and intermittently by-passing said vapor around the liquid to be raised into the absorber.

1,974,726. REFRIGERATOR TRUCK COOLING APPARATUS. William Ryan, Jr., University City, Mo. Application Aug. 17, 1933. Serial No. 685,569. 1 Claim. (Cl. 62—117.)

In combination with a refrigerator truck having an internal combustion engine, provided with a fan for driving air which cools the engine and a condenser, mounted on said truck, and a crankshaft driven by said engine, a sheave fixed to said crankshaft, a plurality of belts mounted on the sheave, one belt to drive said fan, the other belt driving a sheave fixed to the driveshaft of a compressor, which supplies high pressure refrigerant to said condenser.

1,974,728. REFRIGERATION. Albert R. Thomas, New York, N. Y., assignor to Electrolux Servel Corp., New York, N. Y., a corporation of Delaware. Application July 10, 1933. Serial No. 679,610. 12 Claims. (Cl. 62—119.5.)

1. That improvement in the art of refrigeration with a system containing a refrigerant fluid and an additional fluid



1,974,728

for equalizing pressure which comprises, storing an excess of said additional fluid under normal operating conditions in an absorbent and circulating the stored additional fluid in the system responsive to increase in partial pressure of said refrigerant fluid adjacent said absorbent.

1,974,736. REFRIGERATING APPARATUS. Robert R. Candor, Dayton, Ohio, assignor to Frigidaire Corp., Dayton, Ohio, a corporation of Delaware. Application Feb. 27, 1930. Serial No. 431,759. 8 Claims. (Cl. 62—116.)

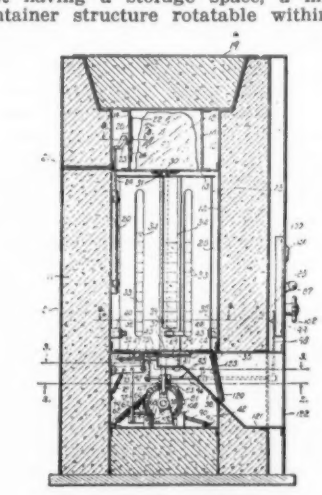
1. A liquid cooling device comprising a cabinet having a storage compartment, a liquid refrigerant header in said compartment, a liquid refrigerant duct extending from said header, a liquid passage forming means surrounding said duct, a spiral vane on said duct, means for supporting a demijohn on said cabinet, a connection between said last named means and said liquid passage forming means, and liquid discharge means outside said cabinet connection to said liquid passage forming means.

1,974,741. REFRIGERATING APPARATUS. Harold M. Graham, Buffalo, N. Y., assignor to Ross Heater & Mfg. Co., Inc., Buffalo, N. Y., a corporation of New York. Applicantion June 21, 1933. Serial No. 676,876. 3 Claims. (Cl. 62—152.)

1. In apparatus of the character described, the combination of cooling means through which a refrigerating medium is circulated, and means for cooling said refrigerating medium, said means including a chamber through which said medium is circulated prior to its passage to said cooling means and an ejector for evacuating said chamber to lower the temperature of said refrigerating medium as it passes therethrough, of equipment for cooling a second medium, said equipment including an interchanger which is located in said chamber and through which said second medium is circulated, whereby as an incident to the cooling of said first mentioned refrigerating medium said second medium is also cooled.

1,974,800. REFRIGERATED VENDING APPARATUS. Samuel E. Link and Fred G. White, Kansas City, Mo., assignors, by mesne assignments, to M. W. Borders, Jr., Kansas City, Mo. Application July 27, 1931. Serial No. 553,264. 7 Claims. (Cl. 312—36.)

1. Vending apparatus comprising a cabinet having a storage space, a multiple container structure rotatable within said



1,974,800

storage space, article delivery means comprising mechanism operating to release and discharge an article from one of the container compartments, and means acting simultaneously with said delivery means to rotate said container structure to present another container compartment in discharge position, and locking means positively actuated in response to the operation of said first means for locking said container structure between successive article delivery operations.

1,974,983 CABINET SHELF. Harold A. Cook, Westleyville, Pa., assignor to General Electric Co., a corporation of New York. Application May 24, 1933. Serial No. 672,590. 11 Claims. (Cl. 211—153.)

1. In a cabinet having shelf supports carried by the walls thereof, a rack including shelf guides, means including feet secured to said rack and arranged out of alignment with the plans of said shelf guides for removably supporting said rack on said shelf supports, said rack being adapted to be supported on said shelf supports with said feet above said guides or with said feet below said guides to adjust the height of said guides, and a shelf slidably supported on said guides.

1,975,009. PROCESS OF FREEZING FOOD PRODUCTS IN METAL CONTAINERS. Alfred L. Kronquest, Syracuse, N. Y., assignor to Continental Can Co., Inc., New York, N. Y., a corporation of New York. Application Feb. 4, 1931. Serial No. 513,434. 2 Claims. (Cl. 99—14.)

1. The process of freezing food products in sealed metal containers having on the exterior surface thereof lithograph decorations consisting in applying over the exterior decorated surface of the container a transparent protective material impermeable by a fluid refrigerant and immersing the protected contained in such fluid refrigerant for a period of time sufficient to freeze the food product in the container.

1,975,046. BOTTLE COOLER. Lester U. Larkin, Atlanta, Go., assignor to Larkin Refrigerating Corp., Atlanta, Ga., a corporation of Georgia. Continuation of application Serial No. 689,312, Sept. 13, 1933. This application March 17, 1934. Serial No. 716,193. 14 Claims. (Cl. 62—126.)

1. A bottle cooler comprising a plate, means for cooling said plate, and a substantially cylindrical heat conducting bottle receptacle fixed in heat conducting contact with a face of said plate and having its axis substantially parallel to said face.

1,975,066. REFRIGERATING UNIT. William B. Sanderson, West Haven, Conn., assignor, by mesne assignments, to The Humidi-Cooler Corp., West Haven, Conn. Application Nov. 4, 1931. Serial No. 572,938. 9 Claims. (Cl. 62—171.)

4. The method of controlling the relative humidity of the air in a room or chamber having therein a relatively shallow cooling coil and a blower to create a current of air over the coil, which comprises controlling the amount of moisture collected upon the coil by varying the turbulence of the air passing over the coil.

BUYER'S GUIDE

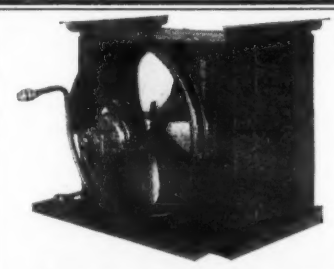
MANUFACTURERS SPECIALIZING IN SERVICE TO THE REFRIGERATION INDUSTRY

SPECIAL ADVERTISING RATE (this column only)—$12.00 per space.
Payment is required monthly in advance to obtain this special low rate.
Minimum Contract for this column—13 insertions in consecutive issues.

A NEW WATER VALVE

Model 71 Solenoid Valve provides dependable control of water spray nozzles on air washers. Drop forged body—heavy stamped cover, crackle finish. Easily installed, small and neat in appearance. Impact type plunger. For use with water only. Can also be supplied for the control of refrigerants. Working pressure 100 lbs. 3/32" port. Write for details.

AUTOMATIC PRODUCTS CO.
121 N. Broadway Milwaukee, Wis.



KRAMER UNIT COOLERS
Manifolded for **FREON**
and for a greater than 20° differential between air and refrigerant
Send for New Literature

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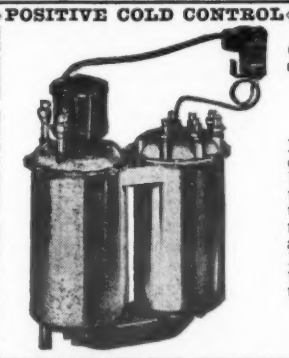
Main Offices and Factory, TRENTON, NEW JERSEY
NEW YORK, 210-212 West 65th Street PITTSBURGH, 5114 Liberty Avenue

◆POSITIVE COLD CONTROL◆FOAM CONTROL◆AUTOMATIC CONTROL◆SAFE◆ FLEXIBLE◆ECONOMICAL WIDE TEMPERATURE RANGE◆

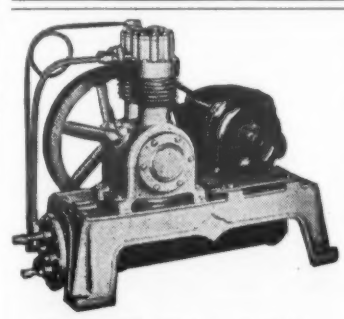


Sell this big aid to Better Business

Dispensers who serve their beer at exactly the desired temperature at all times are getting the bulk of the business these days. Because it enables them to dispense beer in any quantity, at any set temperature, the Radial Dual Control Beer Cooler materially aids dispensers in building up a profitable patronage. Push the Radial Dual Controlled Beer Cooler now—you'll find your prospects enthusiastic over its remarkable advantages. Write today.

COMMERCIAL COIL & REFRIGERATION CO.
455 N. Artesian Ave., CHICAGO

◆INSTANTANEOUS INDIRECT COOLING◆WIDE CAPACITY RANGE◆COMPACT



Style EW—Water Cooled With Water Cooled Head

STARR FREEZE
OUTSTANDING PERFORMANCE
attested by satisfied users — EVERYWHERE!

Sturdy Condensing Units from 80 to 2868 Lbs. I.M.E., and all other commercial refrigeration equipment—Wall type cases with machinery—A beautiful household line of modern, conservative styles—Write for full data.

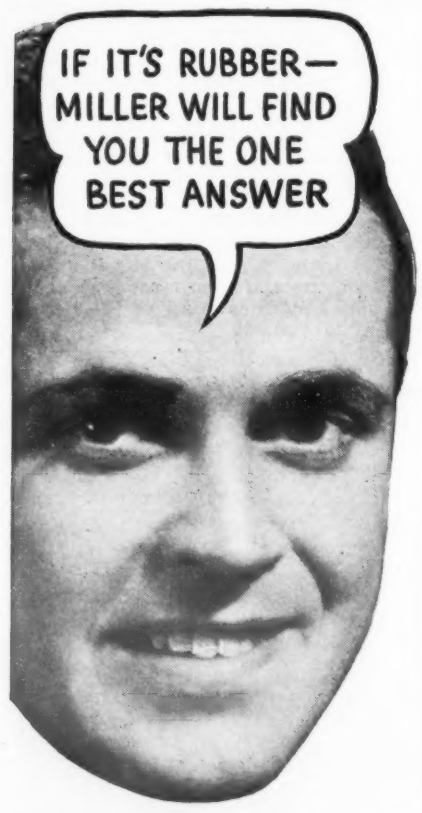
THE STARR COMPANY
Cable "Starr" Richmond, Indiana (factory) U. S. A. Since 1927
1344 S. Flower St., Los Angeles, Calif.

HENRY All Metal Flexible
DOUBLE-ARMORED CHARGING CONNECTION

For all refrigerants non-corrosive to brass. *For charging liquid receivers and truck precooling.* Continuous piece of helical bronze tubing, protected by inner copper double-braided armor and outer interlocked copper armor. Outlet connection can be reflared repeatedly and replaced when necessary.

HENRY VALVE CO.
Specialized Valves & Fittings for Refrigeration
1001-19 N. Spaulding Ave., Chicago

WRITE FOR BULLETINS DESCRIBING HENRY REFRIGERATION SPECIALTIES



Special Service on SPONGE RUBBER PARTS

TEN years of close cooperation have made Miller's technical staff part of the electric refrigeration industry. We know your problems. We have helped solve many of them. Sponge rubber, for instance. Improvements developed by Miller are performing valuable service for leading manufacturers, in new uses of sponge rubber. Our consulting service is yours for the asking. Just write Miller Rubber Products Co., Inc., Akron, Ohio.

OUR EXPERIENCE WILL SAVE YOU TIME AND MONEY

Miller

QUESTIONS

Specifications

No. 1881 (Cement Company, Missouri)—"I have received from you two different issues of ELECTRIC REFRIGERATION NEWS, and I am, therefore, inquiring if you publish specifications on electric compressors as are used in connection with producing cold for air conditioning. If so, I would like one of these publications and will be glad to forward you price of the pamphlet, which I presume will run the same as the REFRIGERATION NEWS, or 10 cents."

Answer: Specifications of commercial condensing units as used for air conditioning have been published in various issues of ELECTRIC REFRIGERATION NEWS. The most recent collection of commercial specifications was published in the September 12 issue. A number of manufacturers returned their specifications too late for that issue and these were published in the September 19 issue.

While the machines covered by these specifications are widely used for air conditioning, the refrigeration capacity figures are given (as stated in the September 12 issue) for suction and discharge pressure conditions which are common in *commercial refrigeration* applications for meat markets, soda fountains, etc. In using these specifications, the capacity figures must be considered as much too conservative for air-conditioning work.

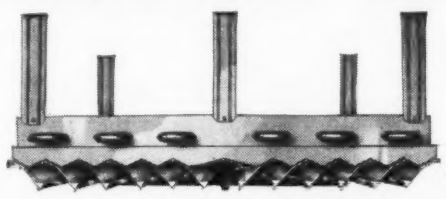
Parts Exposition

No. 1882 (Manufacturer, New York)—"Will you kindly advise us if there is to be held in any city this fall or winter a display, convention or exposition of the manufacturers of refrigeration parts."

Answer: There have been a good many displays and exhibits of complete electric refrigerators in various cities, but we are not aware of any exhibit of refrigeration parts scheduled for this fall or winter. The only exclusive display of refrigeration parts that we recall was put on in various California cities by California Refrigerator Co., 1077 Mission St., San Francisco, a supplier of parts.

If any reader knows of a scheduled exposition by parts manufacturers, we will be glad to pass the information on to the inquirer.

PEERLESS FLASH COOLER



The NEW Eye Appealing Method of Cooling Walk-In Refrigerators

STYLE & RESULTS

Fin Coils and Drip Pans Engineered in an Integral Unit—Saves Installation Cost and Operating Cost

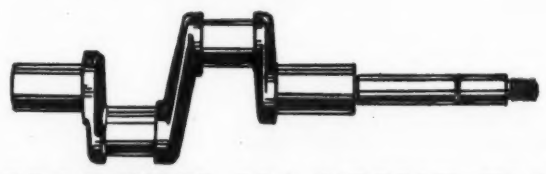
PEERLESS ICE MACHINE CO. 515 W. 35th St. Chicago

DAYTON V-BELTS

● There is a Dayton V-Belt for all makes and types of refrigerators. A stock is available near you. Send for price list and name of your nearest distributor.

THE DAYTON RUBBER MFG. CO.
DAYTON, OHIO
The world's largest manufacturer of V-Belts

SHAFTS . . . Crank and Eccentric for Compressors, made to YOUR Specifications.



Manufacturers—Send Blue Prints for Quotations.

MODERN MACHINE WORKS, INC.
Specializing in the Manufacture of SHAFTS
156 N. Milwaukee Street Milwaukee, Wisconsin

RACKS KOILS KOOL

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PACE SETTERS
IN COIL EFFICIENCY

SUR-E-FEX	Fin Coils
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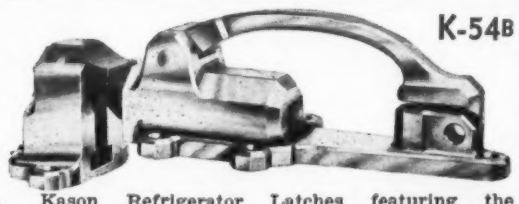
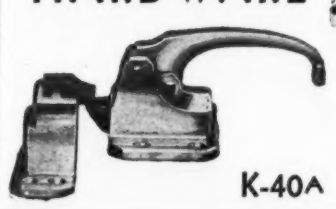
HUM-E-FEX	Non-Dehydrating Coils
AIR-E-FEX	Air-Conditioning Units

SEND FOR NEW CATALOG DESCRIBING THESE SENSATIONAL DEVELOPMENTS

REFRIGERATION APPLIANCES, INC.
H. J. KRACKOWIZER, Pres.
1342 WEST LAKE ST., CHICAGO

KASON
Refrigerator
HARDWARE





Kason Refrigerator Latches featuring the famous patented Micrometer strike for hairline offset adjustments and the rugged Forged Brass construction rank foremost in the field of refrigerator hardware. There is a Kason Lock for every refrigerator need.

Write for literature. Samples on approval.

KASON HARDWARE CORPORATION
61 Navy St., Brooklyn, N. Y.

1934 Refrigeration Directory and Market Data Book

A complete list of manufacturers of refrigeration systems, equipment, parts, materials, supplies, production and service tools, related products, companion merchandise, material handling and delivery equipment, and other devices and services used by the industry. Also detailed specifications of all models of all makes of household and commercial refrigeration equipment and all available statistical data on past sales of refrigeration equipment and the potential future market.

692 Pages, Price $3.00 Per Copy in U. S. (Foreign, $5.00)
Business News Publishing Co., 5229 Cass Ave., Detroit, Mich.

Airaplex Frigidarium Corp.

No. 1883 (Refrigeration Engineers, South Carolina)—"I have received my September 5th copy of the ELECTRIC REFRIGERATION NEWS with data on the Corporate History of the Refrigeration Industry.

"This accumulation of information is certainly interesting and will prove to be of considerable value to a good many concerns and individuals.

"I will appreciate your furnishing me with information, if possible, as to where I can secure information as to the method of operation and details of the component parts of the Airaplex Frigidarium Corporation's equipment.

"This firm is listed in the above mentioned digest of information as being out of business but it might be possible that information is still available."

Carrier Condensing Units

No. 1884 (Manufacturer, Indiana)—"The March 14, 1934 issue of ELECTRIC REFRIGERATION NEWS listed the condensing units manufactured by the Carrier Products Corporation of Newark, New Jersey. The capacities given extend up to and including 1½-hp., air cooled, and 3-hp., water cooled.

"Does Carrier make any condensing units larger than these and if so, how could I obtain on the larger units, say up to and including 50-hp., the same data as given in the ELECTRIC REFRIGERATION NEWS of March 14, 1934."

Answer: Carrier Engineering Corp. has several distinct lines of commercial compressors, some designed specifically for air conditioning and others more for the usual applications of commercial refrigeration.

The small Freon and methyl chloride line to which you probably refer, now extends up to 10 hp. according to our latest information. Specifications of these machines were published on page 12 of the September 19 issue of ELECTRIC REFRIGERATION NEWS. These are used for commercial refrigeration and smaller capacity air-conditioning installations.

Next the company has a line of ammonia machines which originated with one of the predecessor companies, Brunswick- Kroeschell Co. of New Brunswick, New Jersey. This line probably extends well above 50-hp. in some installations, but is not being used primarily for air conditioning, if at all, since the air-conditioning compressors were developed.

Large ammonia machines are not sold as self-contained units, and are installed according to the individual requirements of a given installation. The designers of such an installation choose a compressor with the necessary displacement, a motor big enough to drive it, and a condenser of sufficient capacity. This makes it rather difficult to collect specifications as we have done with low-pressure machines which are more standard in design.

This same is true of high-pressure carbon dioxide machines which Carrier builds in large capacities.

Finally, the Carrier company has its centrifugal compressors using Carrene, trichloromonofluoromethane, and Dielene. These are used exclusively for large air-conditioning installations. They range up to about 250 hp. in one unit, but are not generally suitable, we believe, for requirements below about 50 hp.

At the moment, we are not contemplating the collection of specifications on large ammonia machines, nor on the centrifugal compressors as these are quite special in their application. For additional information on Carrier equipment communicate with Carrier Engineering Corp., 850 Frelinghuysen Ave., Newark, N. J.

Stainless Steel Ice Trays

No. 1885 (Dealer, Pennsylvania)—"Would you be so kind as to inform us of the name and address of a manufacturer, if any, who will be able to supply us with ice cube trays to fit an X-7 General Electric refrigerator, said trays to be made of some material other than aluminum or rubber.

"We want to take this opportunity to tell you that we think you publish a mighty fine paper."

Answer: The "Metiflex" ice cube tray manufactured by McCord Radiator & Mfg. Co., 2587 E. Grand Blvd., Detroit, Mich., is made of stainless steel, and should meet your requirements.

Material for a School

No. 1886 (Refrigeration School, Washington, D. C.)—"Will you kindly send us any information available relative to conducting a school for servicing household or commercial refrigeration units, along with charts, etc."

Answer: The most recent information about conducting a refrigeration school was published on page 19 of the June 6 issue of ELECTRIC REFRIGERATION NEWS. This article discussed some of the educational activities of the Utilities Engineering Institute of Chicago.

Service Information

No. 1887 (Service Company, Texas)—"Will you, if you can, tell where I can get books, leaflets or pamphlets on how to service electric refrigerators used in homes."

Answer: (See below).

No. 1888 (Illinois)—"I have been informed by Mr. Clifford Storck of The Industrial Press that it may be possible for me to get literature on the maintenance of electrical refrigerators, also what you publish on air conditioning."

Answer: A series of articles containing service instructions for various makes of refrigerating machines for which service data is not readily available has been published in past issues of ELECTRIC REFRIGERATION NEWS.

Following is a list of the various machines included and the dates of issues containing the service articles:

Absopure household	March 26, 1931
Majestic hermetic	August 16, 1933
Allison	May 30 and June 6, 1934
Welsbach	June 13, 20, and 27, 1934
Rice household	July 4, 1934
Wayne household	July 11, 1934
Absopure commercial	July 18, 26, and August 1, 1934
Iceberg	August 8, 1934
U. S. Hermetic	August 15, 1934
Belding-Hall ElectrICE	Aug. 22 and 29, 1934
Majestic standard	September 12, 19, 26, 1934
Holmes	October 10, 1934

With reference to coverage of the air conditioning field given by ELECTRIC REFRIGERATION NEWS, one issue of each month specially features air conditioning giving information concerning new equipment developed in that field and recent air conditioning installations. Special articles on air conditioning are also published in the weekly issues of the NEWS.

British & French Mfrs.

No. 1889 (New York)—"Will you kindly send me a list of the British and French domestic refrigerator manufacturers if such a list is available."

Answer: ELECTRIC REFRIGERATION NEWS has not compiled a complete list of British and French manufacturers of electric refrigerators recently. Inquiries have been directed to two possible sources to secure a new list, and we will be glad to forward a copy of any received.

Rice Replacement Parts

No. 1890 (Indiana)—"Can you tell me where I can buy parts for Rice Electric Refrigeration Machinery? This was manufactured by Rice Products, Inc., at 315 Beaubien St., Detroit, Mich., but letters sent to that address are returned."

Answer: Rice Products, Inc., formerly located at 315 Beaubien St., Detroit, went into receivership several years ago and manufacturing activities were discontinued in March of 1931. The history of the Rice company, along with that of other industry pioneers was published in the September 5 issue of ELECTRIC REFRIGERATION NEWS.

Complete service instructions of the original Rice household machine were published in the July 4, 1934 issue of the NEWS. Rice service parts are available from Rex Cooling Industries, Inc., 291 Adams St., Brooklyn, N. Y., and from George Monjian Co., 360 E. Grand Ave., Chicago, Ill.

Bound Volumes of News

No. 1891 (Manufacturer, Massachusetts)—"Please advise if we can obtain a copy each of all ELECTRIC REFRIGERATION NEWS numbers from May, 1932, to April, 1933, and at what price?"

Answer: Bound volumes of the issues of ELECTRIC REFRIGERATION NEWS covering the period May, 1932, to April, 1933, are available as follows:

(1) A special bound volume (heavy board cover) containing all issues of ELECTRIC REFRIGERATION NEWS for a period of *six months* from March 2 to Aug. 31, 1932. Serial numbers 154 to 180, inclusive. Price $3.00. This is not a regular "volume." It is one of a few sets for this particular period which were bound on special order and we have four of these volumes available in stock.

(2) *Volume No. 7,* containing all issues of ELECTRIC REFRIGERATION NEWS from Sept. 7 to Dec. 28, 1932. Serial numbers 181 to 197. This volume has stiff paper board covers and we have only one extra copy in stock.

(3) *Volume No. 8,* containing all issues of ELECTRIC REFRIGERATION NEWS from Jan. 4 to April 26, 1933. Serial numbers 198 to 214. Stiff paper board covers. Price, $3.00. We have an ample stock of this volume number.

(4) We can also furnish the following:

Volume No. 9, May 3 to Aug. 30, 1933. Serial numbers 215 to 232.
Volume No. 10, Sept. 6 to Dec. 27, 1933. Serial numbers 233 to 249.
Volume No. 11, Jan. 3 to April 25, 1934. Serial numbers 250 to 266.
Volume No. 12, May 2 to Aug. 29, 1934. Serial numbers 267 to 284.

Each of these volumes is $3.00 per copy in the paper board binding.

CLASSIFIED

RATES: Fifty words or less, one insertion $2.00, additional words four cents each. Three insertions $5.00, additional words ten cents each.

PAYMENT in advance is required for advertising in this column.

INDEPENDENT SERVICE COMPANIES

HALECTRIC thermostat repair service. B & B, G.E., Cutler-Hammer, Penn, Ranco, Tag., etc. Float valve needles reground and polished. Expansion valves repaired. Gas service, Ethyl, Methyl, Iso-Butane, Sulphur. Your cylinder or ours. Competitive prices. Distributors of "Flawless Brand" tubing. Halectric Laboratory, 1793 Lakeview Road, Cleveland, Ohio.

STATEMENT OF THE OWNERSHIP, MANAGEMENT, CIRCULATION, ETC., REQUIRED BY THE ACT OF CONGRESS OF AUG. 24, 1912,
Of Electric Refrigeration News published Weekly at Detroit, Mich., for Oct. 1, 1934.
State of Michigan } ss.
County of Wayne }

Before me, a Notary Public in and for the State and county aforesaid, personally appeared Geo. N. Congdon, who, having been duly sworn according to law, deposes and says that he is the Business Manager of the Electric Refrigeration News and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management (and if a daily paper, the circulation, etc., of the aforesaid publication for the date shown in the above caption, required by the Act of Aug. 24, 1912, embodied in section 411, Postal Laws and Regulations, printed on the reverse of this form, to wit:

1. That the names and addresses of the publisher, editor, managing editor, and business managers are:
Publisher, F. M. Cockrell, Detroit, Mich.
Editor, George F. Taubeneck, Detroit, Mich.
Business Manager, Geo. N. Congdon, Detroit, Mich.

2. That the owner is: (If owned by a corporation, its name and address must be stated and also immediately thereunder the names and addresses of stockholders owning or holding one per cent or more of total amount of stock. If not owned by a corporation, the names and addresses of the individual owners must be given. If owned by a firm, company, or other unincorporated concern, its name and address, as well as those of each individual member, must be given.)
Business News Publishing Co., Detroit, Mich.
F. M. Cockrell, Detroit, Mich.

3. That the known bondholders, mortgagees, and other security holders owning or holding 1 per cent or more of total amount of bonds, mortgages, or other securities are: (If there are none, so state.)
None.

4. That the two paragraphs next above, giving the names of the owners, stockholders, and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company but also, in cases where the stockholders or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association, or corporation has any interest direct or indirect in the said stock, bonds, or other securities than as so stated by him.

5. That the average number of copies of each issue of this publication sold or distributed, through the mails or otherwise, to paid subscribers during the six months preceding the date shown above is ..... (This information is required from daily publications only.)

GEO. N. CONGDON,
Business Manager.

Sworn to and subscribed before me this 28th day of Sept., 1934.
(SEAL) Roy N. Sharp.
(My commission expires June 29, 1938.)

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DOMESTIC EVAPORATORS
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CONDENSERS
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